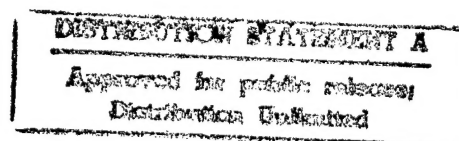

Report on Activities and Programs for Countering Proliferation and NBC Terrorism

May 1997

*Counterproliferation
Program
Review
Committee*

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**CPRC Report on Activities and Programs for Countering Proliferation
and NBC Terrorism
May 1997**

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Executive Summary

Congress directed, in the 1994 National Defense Authorization Act (NDAA), that the Counterproliferation Program Review Committee (CPRC) be established to review activities and programs related to countering proliferation within the Office of the Secretary of Defense (OSD), Department of Energy (DOE), U.S. Intelligence, and the Joint Chiefs of Staff (JCS). The high level national commitment to counter proliferation threats is reflected in the CPRC's membership. It is chaired by the Secretary of Defense, and composed of the Secretary of Energy (as Vice Chairman), the Director of Central Intelligence (DCI), and the Chairman of the Joint Chiefs of Staff (CJCS). The CPRC is chartered to make and implement recommendations regarding interdepartmental activities and programs to address shortfalls in existing and programmed capabilities to counter the proliferation of nuclear, biological, and chemical (NBC) weapons of mass destruction (WMD) and their means of delivery. In the 1997 NDAA, Congress broadened the CPRC's responsibilities and specified that the CPRC also review activities and programs of the CPRC-represented organizations related to countering paramilitary and terrorist NBC threats. The findings and recommendations of the CPRC's annual review for 1997 are presented in this its fourth annual report to Congress.

Over the past year, several organizational changes have occurred in the CPRC. In the 1997 NDAA, Congress extended the authority of the CPRC until the year 2000 and designated the Assistant to the Secretary of Defense for Nuclear and Chemical and Biological Defense Programs (ATSD(NCB)) as the Executive Secretary of the CPRC. The Secretary of Defense designated, consistent with the CPRC's charter, the Deputy Secretary of Defense to perform the duties of CPRC Chairman, replacing the Under Secretary of Defense for Acquisition and Technology (USD(A&T)), who had served in that capacity for the past two years. The CPRC also established a Standing Committee to take a more proactive approach to fulfilling its responsibilities under the law. The CPRC Standing Committee meets regularly and is actively working to perform the duties and implement the recommendations of the CPRC. The Standing Committee is composed of the ATSD(NCB) (as Chairman); the Director, Office of Nonproliferation and National Security, DOE (as Vice Chairman); the Special Assistant to the DCI for Nonproliferation; the Deputy Director for Strategy and Policy, Joint Chiefs of Staff (Plans and Policy, J-5); and the Assistant Secretary of Defense for Special Operations/Low-Intensity Conflict (ASD(SO/LIC)).

To guide its program review process, the CPRC established the Areas for Capability Enhancements (ACEs) to characterize those areas where progress is needed to enhance both the warfighting capabilities of the Combatant Commanders, including the Commanders-in-Chief (CINCs), and the overall ability to satisfy the demands of U.S. nonproliferation and counterproliferation policy. The ACEs define those priority areas where additional capabilities are required to meet the challenges posed by the proliferation of NBC weapons and their means of delivery (NBC/M), including paramilitary and terrorist NBC threats. They also serve as a basis to assess progress in meeting the mission needs of the CPRC-represented organizations for countering proliferation. At the direction of the CPRC, the ACEs were reviewed, modified, and reprioritized to ensure that they continue to reflect the integration of the warfighting needs of the CINCs and the overarching national security objectives they support.

The counterproliferation ACEs for 1997 are listed in Table 1. They reflect the newly developed and prioritized CINC counterproliferation required capabilities, results of recent counterproliferation-related studies and analyses conducted in support of the budget development processes of the CPRC-represented organizations, and the growing government-wide concern about the potential for NBC terrorist threats. The ACEs reflect evolving needs and shortfalls that change as threats evolve and become better understood and as research and development (R&D) and acquisition programs mature, enabling new operational capabilities. Updated and current

Table 1: The New Counterproliferation ACEs for 1997

ACE Priorities			Areas for Capability Enhancements (ACEs)
DoD*	DOE	US INTELL	
1	3	1	Detection, Identification, and Characterization of BW Agents
2	6	3	Detection, Characterization, and Defeat of NBC/M Facilities with Minimal Collateral Effects
3	8	4	Detection, Characterization, and Defeat of Underground Facilities with Minimal Collateral Effects
4	-	2	Theater Ballistic Missile Active Defense**
5	2	5	Support for Special Operations Forces and Defense Against Paramilitary, Covert Delivery, and Terrorist NBC Threats
6	4	6	Provide Consequence Management
7	-	7	Cruise Missile Defense
8	7	8	Collection, Analysis, and Dissemination of Actionable Intelligence to Counter Proliferation
9	-	13	Robust Passive Defense to Enable Sustained Operations on the NBC Battlefield
10	-	9	BW Vaccine RDT&E and Production to Ensure Stockpile Availability
11	-	14	Target Planning for NBC/M Targets
12	-	11	Prompt Mobile Target Detection and Defeat
13	1	15	Detection, Tracking, and Protection of NBC/M and NBC/M-Related Materials and Components
14	9	12	Support Export Control Activities of the U.S. Government
15	5	10	Support Inspection and Monitoring Activities of Arms Control Agreements and Regimes

* includes both the OSD and the JCS

** National Missile Defense is associated with this ACE.

ACEs will serve to improve the focus of future programmatic and managerial efforts to counter NBC/M proliferation and NBC terrorist threats. This year, each CPRC-represented organization individually prioritized the ACEs in accordance with their own departmental mission needs to more accurately reflect each organization's response to countering proliferation.

The CPRC focused its review activities on key R&D and acquisition program accomplishments and milestones to illuminate near-, mid-, and long-term capability improvements. The CPRC has found that a prudent, time-phased response to the challenges posed by NBC/M proliferation and terrorist threats is in place and solidly under way. Although it will take several years to achieve the goals and objectives of the numerous programs responding to the challenges of countering proliferation, the CPRC can report that progress continues to be made in many ACE priority areas. This progress has strengthened U.S. capabilities for countering proliferation and includes the rapid fielding of essential capabilities, focusing interorganizational R&D activities, and improving integration, management, and oversight of programs related to countering proliferation.

Commensurate with the seriousness of the threat, the Department of Defense (which includes OSD, the Joint Staff, Services, and CINCs), DOE, and U.S. Intelligence have each made serious commitments to enhance national capabilities to counter the proliferation of NBC/M and NBC terrorist threats. The combined Department of Defense (DoD) and DOE investment in countering these threats is nearly \$5.4 billion for Fiscal Year (FY) 1998 (a 15% increase from FY 1997). DoD's investment in areas strongly related to counterproliferation totals almost \$4.9 billion in FY 1998, of which approximately \$3.2 billion is for air and missile defense. This investment compares favorably with last year's investment of just under \$4.3 billion, reflecting DoD's steady commitment in the face of continuing budget constraints. It must be emphasized that counterproliferation efforts leverage the substantial investments made in maintaining the requisite military forces and defense infrastructure necessary to provide for the basic common defense of the United States. DoD budgets the bulk of its counterproliferation investment in air and missile defense (DoD ACE priorities 4 and 7); detection and characterization of biological warfare (BW) agents (DoD ACE priority 1); maintaining a robust NBC passive defense capability (DoD ACE priority 9); prompt mobile target detection and defeat (DoD ACE priority 12); and supporting inspection, monitoring, and verification activities of arms control agreements (DoD ACE priority 15).

DOE continues to increase its investment in nonproliferation activities with \$489.4 million requested for FY 1998, up 19% over last year and up 25% over FY 1996. As part of its core national nonproliferation program, DOE focuses on the tracking and control of nuclear weapons related materials and components (DOE ACE priorities 1 and 9), supporting the inspection and monitoring of arms control agreements (DOE ACE priority 5), and defending against and managing the consequences of covert delivery and terrorist threats (DOE ACE priorities 2 and 4). In addition, at the direction of Congress (based on a CPRC recommendation) and in coordination with DoD and U.S. Intelligence, DOE has begun technology development efforts in detection, identification, and characterization of BW and chemical warfare (CW) agents (DOE ACE priority 3). U.S. Intelligence's investments in programs to counter proliferation are discussed in a separately bound "Intelligence Annex" to this report.

Since the May 1996 CPRC report was submitted, the following key activities have been undertaken and accomplishments achieved by DoD, DOE, and U.S. Intelligence to enhance the interdepartmental response to countering NBC/M proliferation and terrorist threats.

Summary of Key DoD Activities

- ***DoD's Counterproliferation Initiative and the Counterproliferation Council.*** The Counterproliferation Initiative is the DoD-wide effort to meet the military challenges posed by the proliferation of NBC/M. To ensure that DoD's broad counterproliferation policy objectives are met and that the implementation of the Counterproliferation Initiative is integrated and focused, the Secretary of Defense established the Counterproliferation Council in April 1996. The "CP Council" is composed of senior DoD officials and meets on a regular basis, focusing on the potential impact of NBC proliferation on the Department's ability to fight two nearly simultaneous major regional contingencies, as well as on Joint and Service doctrine, training, and exercising for integrated operations in an NBC contaminated environment.
- ***DoD's Counterproliferation Support Program.*** At the heart of DoD's Counterproliferation Initiative is the Counterproliferation Support Program, established in 1994 specifically by the CPRC to address DoD shortfalls in counterproliferation capabilities. This program, managed by ATSD(NCB), uses its budget to leverage DoD R&D and acquisition programs to meet the counterproliferation priorities of the CINCs and accelerate the deployment of enhanced capabilities to the field. Currently, the Counterproliferation Support Program is targeting 8 of the 15 ACEs where leveraged support can be decisive. The Counterproliferation Support Program also conducts technology development activities with the DOE National Laboratories, U.S. Intelligence, and several DoD agencies and organizations.
- ***The Counterproliferation 0400 CONPLAN and the CINCs' Counterproliferation Required Capabilities.*** The CJCS's *Counterproliferation 0400 CONPLAN* (concept plan), which directs CINC planning to implement national level counterproliferation policy in terms of operational objectives and supporting tasks, has been coordinated by the Joint Staff and is being used by each of the CINCs to develop their own area-specific counterproliferation CONPLANs. As part of this process, the CINCs have developed a new prioritized listing of counterproliferation required capabilities necessary to conduct the counterproliferation mission from a military warfighting perspective.
- ***The 1996 Counterproliferation Study.*** This Joint Service, multi-organizational DoD study, performed in support of a Deputy Secretary of Defense-directed review of counterproliferation-related programs, provided senior DoD leadership with estimates of quantitative returns on counterproliferation investments over the FY 1998 - 2003 Future Years Defense Plan (FYDP). The study found that investments in NBC/M passive defense, active defense, and counterforce capabilities have positive and synergistic effects on enhancing the effectiveness of ground combat, air base, and port facility operations in an NBC contaminated environment. Furthermore, it found that adapting NBC passive defense technologies to counterterrorism activities can have a positive impact on reducing casualties and disruptions from terrorist

CW/BW threats. As a result of these findings, an increase of \$225 million over the FYDP was budgeted to improve BW detection and warning capabilities of U.S. forces, NBC target defeat and counterterrorism capabilities of the U.S. Special Operations Command, and DoD's consequence management capabilities.

- **Ongoing Advanced Concept Technology Demonstrations (ACTDs).** To accelerate the fielding of advanced technologies and capabilities to counter NBC/M threats, two ACTDs are currently under way: i) the Counterproliferation ACTD to enhance capabilities for defeating hard and buried NBC/M targets with minimal collateral effects; and ii) the Air Base/Port Bio Detection ACTD to improve capabilities to detect and provide warning of BW attacks at fixed facilities. Field demonstrations of these ACTDs will be completed in FY 1998 and prototype equipment will then be turned over to their CINC sponsors for operational integration and deployment.
- **Initiation of New Counterproliferation-Related ACTDs.** To continue the accelerated fielding of enhanced capabilities to counter NBC/M proliferation and NBC terrorist threats, three new counterproliferation-related ACTDs have been initiated: i) the Counterproliferation Counterforce ACTD (a follow-on to the ongoing Counterproliferation ACTD and denoted as the "CP2 ACTD") to provide expanded options for characterizing and defeating hardened and underground NBC/M targets while minimizing collateral effects; ii) the Joint Biological Remote Early Warning System (JBREWS) ACTD to provide enhanced capabilities for early warning of BW attacks; and iii) the Consequence Management "911-BIO" ACTD to improve the interagency emergency response to the consequences of terrorist BW attacks.
- **The Hard and/or Deeply Buried Target Defeat Capability Program.** This Joint Service acquisition effort reviewed over 60 concepts submitted by industry and DoD/DOE laboratories (including concepts from 17 foreign countries) to improve capabilities to defeat hard and/or deeply buried targets – a key ACE priority. An integrated product team is now working with the Counterproliferation Support Program to develop plans for participating in the CP2 ACTD.
- **The Joint Theater Air and Missile Defense Organization (JTAMDO).** The JTAMDO has been established as the single organization within DoD responsible for coordinating, planning, and providing oversight for Joint integrated theater air and missile defense requirements, operational concept definition, and architecture development. It coordinates theater defense activities with the CINCs, Services, and Defense Agencies.
- **Reprioritized Funding for U.S. Special Operations Command (USSOCOM).** Counterproliferation is a principal mission of USSOCOM. Special Operations Forces (SOF) may be called upon to enforce U.S. counterproliferation policy long before the authorization of direct military action. SOF can carry out measures to interdict sea or land shipments of NBC weapon-related materials, provide deep reconnaissance to locate NBC/M, and conduct precision strikes to capture or neutralize them. In recognition of these capabilities, the Deputy Secretary of Defense directed additional funding to supplement SOF operations and maintenance, procurement, and R&D budgets over the FYDP.

- ***The Force Protection Initiative.*** Several DoD organizations are responding to the call of the Secretary of Defense and the CJCS to review the force protection capabilities of U.S. forces worldwide. Activities under way include fielding near-term improvements in physical security equipment, conducting facility inspections to rectify force protection shortfalls, and developing an R&D plan to address longer term force protection needs.
- ***The Domestic Preparedness Initiative.*** In response to congressional direction, DoD is playing a key role in interagency activities to enhance capabilities to prevent and respond to terrorist incidents involving NBC weapons. DoD is working with the Federal Bureau of Investigation (FBI) and the Federal Emergency Management Agency to make improved technologies and training available to federal, state, and local emergency response authorities. DoD, led by ASD(SO/LIC), is implementing the following activities in response to this initiative: establishing a Chemical Biological Quick Reaction Force (CBQRF) subordinate to the DoD Response Task Force Headquarters; fielding the Marine Corps' Chemical Biological Incident Response Force, an element of the CBQRF; supporting the establishment of Metropolitan Medical Strike Teams; supporting the 911-BIO ACTD and other R&D activities to improve consequence management capabilities; and working closely with state and local authorities to transfer DoD-unique NBC response capabilities and expertise to improve the overall intergovernmental emergency response to NBC incidents.
- ***The Air Force Counterproliferation Integrated Process Team (CIPT).*** The CIPT has been established to plan and coordinate all Air Force counterproliferation activities, including the preparation of an Air Force Counterproliferation Master Plan and the implementation of recommendations derived from the recently completed Air Force study, *The Effects of Chemical and Biological Warfare on Air Base Combat Operations*. This comprehensive study identified the need for improvements in individual and collective protection, training standards and field exercises, automated CW/BW detectors, base-level contamination assessment, and education for senior leadership and new policies and procedures for sustaining operations in CW/BW contaminated environments. It led to the creation of the "Air Force NBC Ability-to-Survive-and-Operate" IPT to oversee passive defense activities in coordination with the CIPT.
- ***The Joint Vaccine Acquisition Program for Biological Defense.*** The need to produce vaccines at a pace rapid enough to match any anticipated battlefield demand is a high CPRC and CINC priority. Significant progress has been made in developing a BW vaccine production program, and a solid acquisition strategy based on comprehensive analyses is in place. A Request for Proposals for a prime systems contractor was released to industry last year, and proposals have been received and are under review. Contract award is expected by the end of FY 1997.
- ***The Chemical Biological Arms Control Technology Program.*** The Defense Special Weapons Agency, through this program, has been established as the DoD lead for developing technologies required for the implementation, verification, monitoring, and inspection activities associated with chemical and biological arms control treaties and agreements, including the Chemical Weapons Convention and the Biological Weapons Convention, while protecting U.S. national security interests.

- ***Responding to Comprehensive Test Ban Treaty (CTBT) Signature.*** With the signing of the CTBT in September 1996, DoD, through its Deputy for Nuclear Treaty Programs, has intensified its efforts to prepare for CTBT implementation by enhancing R&D activities to fulfill the President's CTBT Safeguards program, operationally implementing the International Monitoring System, beginning the transition of the International Data Center to the CTBT Organization, and continuing to provide technical support to the CTBT's Preparatory Commission and the Provisional Technical Secretariat.
- ***Science and Technology Strategic Planning for Counterproliferation.*** The strategic planning process for DoD's science and technology (S&T) program was enhanced again this year with the issuance of DoD's second *Joint Warfighting S&T Plan*. "Countering WMD" and "Chemical/Biological Warfare Defense" are two of the 10 Joint Warfighting Capability Objectives identified in the plan. The *Joint Warfighting S&T Plan* is incorporated into the Defense Planning Guidance, and its Joint Warfare Capability Objectives receive funding priority in DoD's FYDP.
- ***Key Programmatic Accomplishments.*** Well over 100 DoD programs are strongly supporting national efforts to counter NBC/M proliferation and terrorist threats. Over the past three years, substantial progress has been made in these programs to improve fielded counterproliferation, nonproliferation, and NBC counterterrorism capabilities and to establish the necessary groundwork for continuing advances. A few, selected programmatic accomplishments are summarized in Table 2 below.

Summary of Key DOE Activities

- ***The Chemical and Biological Nonproliferation Program.*** This program has been established in conjunction with DoD and U.S. Intelligence to leverage DOE's extensive expertise in the chemical and biological sciences resident in the National Laboratories. Several R&D projects have been funded based on their ability to expedite the fielding of advanced CW/BW defense capabilities by leveraging and filling gaps in ongoing DoD and U.S. Intelligence programs.
- ***Detecting and Characterizing Worldwide Production of Nuclear Materials and Weapons.*** DOE continued development of complementary remote and on-site tools to detect and characterize foreign nuclear materials production activities. Acquisition of special nuclear materials is the most important step in nuclear weapons proliferation. Therefore, the ability to detect the production of special nuclear materials is a critical proliferation prevention capability, and the ability to detect such production remotely is a powerful deterrent. A highlight during the past year was the demonstration of a ground-based second generation differential absorption lidar system to detect and identify proliferation-related effluents.
- ***Monitoring Worldwide Nuclear Testing.*** DOE has continued to develop ground-based technical methods specifically intended for the CTBT International Monitoring System. Radionuclide monitoring techniques offer an important tool by providing unequivocal proof of a nuclear detonation and critical forensic data to support CTBT verification. DOE has developed

Table 2: DoD's Programmatic Response to the Counterproliferation ACEs

DoD ACE Priority	Selected Accomplishments in DoD Counterproliferation Programs
1. Detection, Identification, and Characterization of BW Agents	<ul style="list-style-type: none"> Activated an Army Company equipped with the Biological Integrated Detection System Interim Biological Agent Detector fielded on selected surface ships deployed to high threat areas Accelerated development of advanced early warning BW agent detection systems, including the Long Range Biological Standoff Detection and the Joint Biological Point Detection systems Continuing the Air Base/Port Bio Detection ACTD and initiation of the JBREWS ACTD
2. Detection, Characterization, and Defeat of NBC/M Facilities with Minimal Collateral Effects	<ul style="list-style-type: none"> Conducted integrated sensor, weapon, and targeting tool field tests for NBC/M and underground facility defeat and collateral effects mitigation as part of the Counterproliferation CP1 ACTD Initiated the follow-on Counterproliferation Counterforce CP2 ACTD Agent defeat weapons system concepts collected from industry and DoD/DOE labs for evaluation
3. Detection, Characterization, and Defeat of Underground Facilities with Minimal Collateral Effects	<ul style="list-style-type: none"> Technical evaluation of hard and deeply buried target defeat/neutralization concepts submitted by industry and the DoD/DOE labs See ACE #2 entries above
4. Theater Ballistic Missile Active Defense	<ul style="list-style-type: none"> Theater ballistic missile defense procurement transitioned to the Services; JTAMDO established Successful flight tests for PATRIOT PAC-3/Guidance Enhanced Missile, Hawk, Navy Area Theater Ballistic Missile Defense, and the Israeli/BMDO Arrow programs Completed 7 Theater High Altitude Area Defense system flight tests Airborne Laser boost phase defense system entered Program Definition and Risk Reduction phase; contract issued to industry team to initiate system Dem/Val Completed MoU with European partners for MEADS project definition and validation National Missile Defense elevated to deployment readiness program, RFP for lead systems integrator released, and an Integrated Deployment Plan being drafted
5. Support for Special Operations Forces and Defense Against Paramilitary, Covert Delivery, and Terrorist NBC Threats	<ul style="list-style-type: none"> Continued development of specialized technologies and equipment prototypes to assist SOF and Explosive Ordnance Disposal teams in countering CW/BW threats Continued forward deployment of specialized equipment to enhance readiness sustainment Enhanced coordination of Joint Service exercises and readiness sustainment activities Formed organizational structure and initiated facility assessments to enhance U.S. force protection
6. Provide Consequence Management	<ul style="list-style-type: none"> Established the Marine Corps Chemical Biological Incident Response Force Initiated planning and development of the Consequence Management 911-BIO ACTD Integrated consequence management training for state and local First Responders
7. Cruise Missile Defense	<ul style="list-style-type: none"> Demonstration of Mountain Top surveillance radar technology and transfer to the Navy for further development; initiation of low cost cruise missile defense studies Technology sharing and synergy with ballistic missile defense programs
8. Collection, Analysis, and Dissemination of Actionable Intelligence to Counter Proliferation	<ul style="list-style-type: none"> See the Intelligence Annex to this report
9. Robust Passive Defense to Enable Sustained Operations on the NBC Battlefield	<ul style="list-style-type: none"> Continued deployment of critical NBC detection and warning, individual and collective protection, and decontamination systems for use throughout the battlespace Continuing advances in CW/BW medical defense RDT&E
10. BW Vaccine RDT&E and Production to Ensure Stockpile Availability	<ul style="list-style-type: none"> Contract proposals for prime systems contractor being evaluated; award expected in FY 1997 Continued production of anthrax vaccine to meet DoD stockpile needs in FY 1997; screened several BW vaccines for safety and efficacy; extensive vaccine RDT&E activities under way
11. Target Planning for NBC/M Targets	<ul style="list-style-type: none"> User acceptance of integrated target planning and weaponeering tools by CINC USEUCOM for use in Bosnia as part of Operation Joint Endeavor
12. Prompt Mobile Target Detection and Defeat	<ul style="list-style-type: none"> Development of a foliage penetrating radar and other sensors to defeat camouflage, concealment and deception; new capabilities for near real-time exploitation of wide area imagery Target recognition algorithm demonstration as part of DARPA's Semi-Automated Imagery Processing ACTD Demonstrated operational utility of C4I systems for rapid dissemination of intelligence to users
13. Detection, Tracking, and Protection of NBC/M and NBC/M-Related Materials and Components	<ul style="list-style-type: none"> Deployment of prototype Specific Emitter Identification System for identifying ships at sea suspected of transporting NBC/M or related materials; fleet integration under way
14. Support Export Control Activities of the U.S. Government	<ul style="list-style-type: none"> Reviewed over 18,000 export license application for military and dual-use technologies Enhanced the "Wassenaar Arrangement", a new multinational export control framework
15. Support Inspection and Monitoring Activities of Arms Control Agreements and Regimes	<ul style="list-style-type: none"> Continued inspection, monitoring, and escort support for nuclear weapons arms control treaties Helping Ukraine, Belarus, and Kazakhstan to become non-nuclear weapons states Eliminated 64 SLBM launchers, dismantled 81 ICBMs, dismantled 20 heavy bombers, and sealed 59 nuclear weapons test tunnels and bore holes in FSU states Transitioned over 15,000 FSU scientists and engineers formerly employed in NBC weapon production to more peaceful civilian employment Streamlined management of R&D programs under DSWA to improve CTBT implementation Continued development of a global continuous threshold monitoring network and data fusion knowledge base for CTBT verification Technology R&D for CW/BW arms control treaty implementation, monitoring, and verification

an automated radionuclide particulate detector, as well as a prototype automated xenon gas detector for commercialization and use by the International Monitoring System.

- ***Securing Nuclear Materials in Russia and States of the Former Soviet Union (FSU).*** Material protection, control, and accounting (MPC&A) cooperation is now underway at over 40 locations in Russia and seven other FSU states, providing improved security for tens of tons of weapons-useable nuclear materials. This represents more than 75% of the known locations possessing such materials. Negotiations are currently under way (scheduled to be completed this year) to expand MPC&A cooperation to include all weapons-useable nuclear material at all known facilities in the FSU. However, full implementation of MPC&A upgrades will take several years to complete.
- ***Initiative for Proliferation Prevention with Russia and FSU States.*** Under this program, cooperative projects between a coalition of 75 U.S. laboratories, corporations and universities, and the nuclear inheritor states of the FSU have engaged more than 2,700 former weapons personnel in the FSU in projects ranging from MPC&A and nuclear safety to materials science, biotechnology, and instrumentation – avoiding potential “brain drain” to proliferants and providing long term employment in non-weapons work.
- ***Strengthening the Nuclear Nonproliferation Regime.*** DOE’s efforts have helped to promote adherence to the Nuclear Non-Proliferation Treaty and increase the effectiveness and efficiency of the International Atomic Energy Agency (IAEA). Successes, in part due to work associated with this program, included the negotiation and signing of the CTBT, the facilitation of IAEA inspections of excess fissile materials, and the canning of over 50 percent of the spent fuel canisters at the North Korean nuclear reactor. Canning of the remaining spent fuel canisters is expected to be completed during the summer of 1997. Support for IAEA inspections of spent fuel stored in North Korea will continue.

Summary of Key U.S. Intelligence Activities

Many of U.S. Intelligence’s activities cannot be described in this unclassified setting. The classified Intelligence Annex to this report contains a more thorough discussion of the activities and successes of U.S. Intelligence.

- ***Intelligence Community Support for Counterproliferation.*** In response to the CJCS’s *Missions and Functions Study* and the *Counterproliferation 0400 CONPLAN*, U.S. Intelligence continues to work closely with the Joint Staff in support of the CINCs. The Defense Intelligence Agency’s (DIA) Office of Counterproliferation, Nuclear, Biological, and Chemical Assessments, the Joint Staff’s (J-2, Intelligence) Executive Agent for counterproliferation issues, continues to implement its CJCS-approved *Military Intelligence Action Plan*.
- ***Strategic Planning Process.*** U.S. Intelligence, through its corporate strategic and evaluation planning process, continues to support efforts to counter proliferation. This ongoing process contributes to the National Needs Process and the National Foreign Intelligence Program, the

Joint Military Intelligence Program, and the Tactical Intelligence and Related Activities Program and Planning Guidance. A major benefit of this effort has been the placement of a significant number of DoD personnel within the DCI's Nonproliferation Center. This has helped integrate intelligence support into DoD counterproliferation needs and actions. U.S. Intelligence also has expanded its relations with law enforcement officials. The FBI and U.S. Customs Service, for example, have assigned senior agents to the Nonproliferation Center to assist in developing initiatives to counter proliferation.

- **Operational Planning Process.** DIA is linking counterproliferation intelligence production more directly to the CINCs' deliberate planning process. DIA is taking guidance from the Joint Strategic Capabilities Plan and direction from the CINCs' J-2s, J-3s (Operations), and J-5s which are enabling U.S. Intelligence to more clearly define and satisfy the intelligence requirements necessary to support CINC counterproliferation contingency planning and operations.
- **Intelligence Successes.** Some intelligence successes that can be described in this setting include:
 - Support to State Department efforts providing actionable intelligence to the United Nations Special Commission's inspection and monitoring activities in Iraq;
 - Development of a list of indicators to alert collectors and analysts that CW and BW are about to be used; similar initiatives are also under way to provide early warning alerts for the possible diversion of nuclear materials;
 - Support to congressional committees, including a report that reviewed and evaluated nonproliferation programs in the National Foreign Intelligence Program FY 1998 budget submission; and
 - Development of a detailed set of information needs to guide intelligence collection and analysis, known as *Nonproliferation: Compendium of Country-Specific Priority Intelligence Needs and Actions*.

CPRC Findings and Recommendations

The CPRC finds, as evidenced by the numerous program and activity accomplishments cited above and in the main body of the report, that the seriousness of NBC/M proliferation and NBC terrorist threats, and the need to enhance capabilities to counter them, are recognized throughout DoD (including OSD, the Joint Staff, Services, and CINCs), DOE, and U.S. Intelligence. Indeed, "countering proliferation" is an established and institutionalized priority within each of the CPRC-represented organizations. These efforts reflect the President's firm commitment to stem NBC/M proliferation and counter NBC terrorism. Much has been done, but much remains to do. Moreover, as decision makers, policy makers, and warfighters continue to reprioritize their nonproliferation, counterproliferation, and counterterrorism policy and strategy objectives, the CPRC will continue to review related DoD, DOE, and U.S. Intelligence activities

and programs to ensure that they continue to meet evolving needs. The CPRC's recommendations for 1997 are summarized in Figure 1 and discussed below.

The FY 1998 President's budget addresses priority programs for countering NBC/M proliferation and NBC terrorism. *Therefore, the CPRC recommends that the FY 1998 President's budget for each of the CPRC-represented organizations be authorized and appropriated by the Congress.*

Although the activities and programs proposed in the FY 1998 President's budget will continue to produce substantial progress in national capabilities to counter NBC/M proliferation and NBC terrorism, areas of capability shortfall will remain. *Therefore, the CPRC directs each represented organization to continue to address the needs and requirements for countering proliferation and NBC terrorism as high priority items in their FY 1999 and out-year budgets.* In light of the CPRC's finding that the need to enhance U.S. national capabilities to counter proliferation has become established and institutionalized within the DoD, DOE, and U.S. Intelligence, the CPRC has not identified specific programmatic options for FY 1999. The CPRC expects the normal budget development processes of each CPRC-represented organization to be adequate to ensure a robust, integrated program for countering proliferation. However, key areas for progress addressing certain specific aspects of the ACE priorities have been identified for special consideration during budget development activities.

Recommendations of the CPRC

1997

- **Approve the President's FY 1998 Budget for the CPRC-Represented Organizations Addressing Key Priorities in Countering Proliferation and NBC Terrorism**
- **Continue to Address the Needs and Requirements for Countering Proliferation and NBC Terrorism as High Priority Items in Annual Budget Development Processes**
- **Continue Close Coordination of R&D and Acquisition Activities and Programs among DoD, DOE, and U.S. Intelligence, including establishing:**
 - validation standards for NBC hazard prediction models
 - an integrated R&D plan for advanced hyper-/ultra-spectral CW/BW detectors
 - an integrated R&D and acquisition plan for unattended ground sensors to improve developer coordination and user acceptance
- **Improve Coordination with the NPAC TWG**
- **Increase International Cooperative Efforts by Expanding Existing Activities to Counter Global NBC/M Proliferation and Terrorist Threats**
- **Review and Reprioritize the Counterproliferation ACEs to Reflect Progress and Newly Emerging Priorities**

Figure 1 CPRC Recommendations for 1997

To continue the record of interdepartmental achievement through an integrated response to meeting the counterproliferation ACE priorities, *the CPRC recommends a continuation of the close coordination of counterproliferation-related R&D and acquisition activities and programs among DoD, DOE, and U.S. Intelligence.* To this end, the CPRC has identified three specific areas where improved interorganizational coordination can improve the efficiency, cost-effectiveness, and responsiveness of R&D and acquisition activities:

- *Establish "validation standards" for nuclear, biological, and chemical dispersion and hazard prediction models and designate a lead agency for implementation;*
- *Establish an integrated cooperative R&D plan for advanced state-of-the-art hyper-/ultra-spectral sensors for chemical and biological detection to improve coordination and synergize the efforts of various ongoing R&D activities; and*
- *Establish an integrated R&D and acquisition plan for unattended ground sensors to improve cooperation within the developer community and enhance prospects for user acceptance and "buy-in" of this maturing technology.*

Because the Nonproliferation and Arms Control Technology Working Group (NPAC TWG) and the CPRC share similar goals and objectives for reducing the threat of NBC/M proliferation and terrorism, *the CPRC directs the CPRC Standing Committee to improve coordination and information sharing between its activities and those of the NPAC TWG and explore the possibility of joint cooperative efforts.*

Recognizing the global nature of NBC/M proliferation and NBC terrorist threats, *the CPRC recommends increasing international cooperative efforts to counter these threats by expanding existing cooperative activities in R&D, proliferation prevention, and counterterrorism being conducted by DoD, DOE, and U.S. Intelligence.* To expedite and more efficiently and effectively meet the challenges posed by these global problems, the CPRC continues to encourage and endorse cooperation with our international partners through joint activities, programs, and conferences.

The CPRC, through its Standing Committee, will continue to review and update the counterproliferation ACEs, reprioritizing them as required. This process is central to ensure that the ACEs continue to reflect the integration of CINC warfighting priorities and the overarching national security policy and strategy objectives they support. Updated and relevant ACEs assist the CPRC in meeting its program review responsibilities, while improving the focus of future programmatic and managerial efforts among the CPRC-represented organizations to counter NBC/M proliferation and NBC terrorist threats.

1. Introduction and Overview

In this section the purpose, duties, and responsibilities of the Counterproliferation Program Review Committee (CPRC) are described along with its statutory annual reporting requirements. Key definitions of terms used in the report are provided, including a definition of the scope of the CPRC's activity and program review responsibilities. The multi-tiered response and operational objectives required to counter the proliferation of nuclear, biological, and chemical (NBC) weapons and their means of delivery, including NBC terrorist threats, are discussed to provide some background and context for the program descriptions that make up the bulk of the report. Finally, the new counterproliferation Areas for Capability Enhancements (ACEs), modified since the 1996 CPRC report, are described.

1.1 Description and Purpose of the CPRC

This report is the fourth annual report of the CPRC chartered by Congress to report on the activities and programs of the Department of Defense (which includes the Office of the Secretary of Defense (OSD) and the Joint Chiefs of Staff (JCS)), Department of Energy (DOE), and U.S. Intelligence related to enhancing U.S. capabilities to counter the proliferation of NBC weapons of mass destruction (WMD) and their means of delivery (NBC/M).

1.1.1 The Counterproliferation Program Review Committee. Section 1605 of the National Defense Authorization Act (NDAA) for Fiscal Year (FY) 1994 (Public Law No. 103-160, 107 Stat. 1845, November 1993) established the Nonproliferation Program Review Committee (NPRC) and requested the Secretary of Defense to submit a report to Congress concerning nonproliferation activities of Executive Branch agencies. The NPRC issued its findings in a May 1994 Report to Congress entitled *Report on Nonproliferation and Counterproliferation Activities and Programs*. Congress modified the charter of the NPRC in Section 1502 of the FY 1995 NDAA (Public Law No. 103-337, 108 Stat. 2914, October 5, 1994), replacing the NPRC with the CPRC, and focusing its review responsibilities on nonproliferation and counterproliferation activities and programs of the DoD (which includes OSD and the Joint Staff), DOE, and U.S. Intelligence. The CPRC is chaired by the Secretary of Defense, and composed of the Secretary of Energy (as Vice Chairman), the Director of Central Intelligence (DCI), and the Chairman of the Joint Chiefs of Staff (CJCS). The CPRC's membership is indicative of the high level, interdepartmental response necessary to achieve national nonproliferation and counterproliferation policy and strategy objectives to counter the proliferation of NBC/M.

New Developments. Over the past year, several organizational changes have occurred in the CPRC. In the 1997 NDAA (Section 1309 of Public Law No. 104-210, 110 Stat. 2710, 1996), Congress extended the authority of the CPRC until the year 2000 and designated the Assistant to the Secretary of Defense for Nuclear and Chemical and Biological Defense Programs (ATSD(NCB)) as the Executive Secretary of the CPRC. It also amended the purposes of the CPRC to include ensuring the development and fielding of technologies and capabilities "to negate paramilitary and terrorist threats involving weapons of mass destruction". In recognition of this recent amendment to the CPRC's authority, additional attention will be given in this report

to DoD, DOE, and U.S. Intelligence research and development (R&D) and acquisition activities and programs assisting in efforts to counter paramilitary and terrorist NBC threats.

In other developments, the Secretary of Defense designated, consistent with the CPRC's charter, the Deputy Secretary of Defense to perform the duties of CPRC Chairman, replacing the Under Secretary of Defense for Acquisition and Technology (USD(A&T)), who had served in this capacity during the last two years. This action served to equalize the level of representation of CPRC principals among the CPRC-represented organizations, particularly as regards DoD, where the Deputy Secretary chairs DoD's internal Counterproliferation Council (see subsection 5.1.1). The CPRC also established a Standing Committee to take a more proactive approach to fulfilling its responsibilities under the law. The CPRC Standing Committee meets regularly and is actively working to perform the duties and implement the recommendations of the CPRC. The Standing Committee is composed of the ATSD(NCB) (as Chairman); the Director, Office of Nonproliferation and National Security, DOE (as Vice Chairman); the Special Assistant to the DCI for Nonproliferation; the Deputy Director for Strategy and Policy, Joint Chiefs of Staff (Plans and Policy, J-5); and, in recognition of the new statutory role of the CPRC in counterterrorism activities, the Assistant Secretary of Defense for Special Operations/Low-Intensity Conflict (ASD(SO/LIC)).

Duties and Responsibilities. The CPRC is directed by Congress to: i) identify and review existing and proposed capabilities and technologies for supporting U.S. counterproliferation policy and efforts, including efforts to stem the proliferation of NBC/M and negate paramilitary and terrorist NBC threats; ii) prescribe requirements and priorities for the development and deployment of effective capabilities and technologies; iii) identify deficiencies in existing capabilities and technologies; iv) formulate near-term, mid-term, and long-term programmatic options for meeting identified requirements and eliminating deficiencies; v) establish priorities for programs and optimize funding for capability and technology development; vi) identify and eliminate undesirable redundancies or uncoordinated efforts in the development of such technologies and capabilities; vii) encourage and facilitate interagency and interdepartmental funding of programs; viii) ensure integration of DOE programs into the operational needs of DoD and U.S. Intelligence through technology demonstrations and prototype development; and ix) annually assess committee actions and the status of committee recommendations and report their findings to Congress. The CPRC submits an annual report to Congress on May 1st of each year detailing its findings and recommendations. These reports, previously published in May of 1995 and 1996, were both entitled: *Report on Activities and Programs for Countering Proliferation*. (The first NPRC report was published in May 1994.) Excerpts of the 1994, 1995, and 1997 NDAs establishing and defining the authority and responsibilities of the CPRC are provided in Appendix A.

1.1.2 CPRC Annual Reporting Requirements. Congress directed the Secretary of Defense to submit to Congress, not later than May 1st of each year, a report of the findings of the CPRC. Congress specified that the report contain the following information: i) a complete list, by specific program element, of the existing, planned, or newly proposed capabilities and technologies reviewed by the CPRC; ii) a complete description of the requirements and priorities established by the CPRC; iii) a comprehensive discussion of the near-term, mid-term, and long-term programmatic options formulated by the CPRC for meeting the CPRC's requirements and for

eliminating identified deficiencies, including the annual funding requirements and completion dates established for each such option; iv) an explanation of the recommendations made by the CPRC, together with a full discussion of the actions taken to implement them; v) a discussion and assessment of the status of each CPRC recommendation during the fiscal year preceding the fiscal year in which the report is submitted; vi) identification of each specific DOE program that the Secretary of Energy plans to develop to initial operating capability (IOC) and each such program that the Secretary does not plan to develop to IOC; and vii) for each new technology program scheduled to reach operational capability, a recommendation from the CJCS that represents the views of the Commanders-in-Chief (CINCs) of the unified and specified commands regarding the utility and requirement of the program. This report is in response to that request.

1.1.3 Definitions. In this report, proliferation refers to the spread of nuclear, biological, and chemical weapons and their means of delivery (denoted "NBC/M") – commonly referred to as weapons of mass destruction (i.e., "WMD"). There is still no universal and consistent use of terms to designate these weapons either within or among the CPRC-represented organizations. The CPRC itself is in a period of transition regarding a consistent use of terminology to describe NBC weapons and their means of delivery. However, in this report the term "NBC/M", defined above, will generally be used because of its greater specificity (compared to the term "WMD") and because it serves to emphasize the important distinctions that exist between nuclear, biological, and chemical weapons, and in the corresponding means required to counter them. Nevertheless, the term "WMD" is still used occasionally in the report, particularly when referring to counterproliferation- and counterterrorism-related policy and strategy objectives (where the term has been frequently used) and to previous activities of the CPRC. It should also be noted that the term "nuclear weapons" is meant to include radiological weapons as well as the more familiar large energy yield nuclear weapons.

In addition to countering NBC/M, this report also deals with the technologies and capabilities to defeat the infrastructure elements required to support the production, storage, and deployment of NBC weapons and their delivery systems, in particular ballistic and cruise missiles. Technologies and capabilities to negate paramilitary and terrorist NBC threats are also addressed. The report focuses on existing and emerging proliferant states, but also considers the proliferation of NBC/M from China, the states of the former Soviet Union (FSU), and Third World nations.

DoD, DOE, and U.S. Intelligence (i.e., the "intelligence community") are responsible for a wide variety of tasks to prevent, deter, and counteract NBC/M proliferation and NBC terrorism. The specific responsibilities of DoD, referred to as "counterproliferation" and "combating terrorism" (which includes "counterterrorism" and "anti-terrorism"), span the spectrum from military operations and warfighting to supporting diplomatic efforts and include supporting proliferation prevention and intelligence activities, implementing and verifying arms control treaties, deterring the use of NBC weapons, defending against NBC/M, operating effectively in the presence of NBC/M, and maintaining a robust capability to find and destroy NBC weapon delivery forces and their supporting infrastructure elements with minimal collateral effects, should this become necessary. DoD's role in combating terrorism includes: protecting U.S. forces from paramilitary and terrorist threats (generally referred to as "anti-terrorism"); supporting interagency counterterrorism activities; working with federal, state, and local authorities to support "First Responder" emergency response teams (i.e., those first on the scene); and providing consequence

management assistance in incidents involving NBC weapons. DOE's "nonproliferation" responsibilities include activities and programs in nuclear proliferation prevention, intelligence support, treaty verification, and technology development to support these responsibilities. DOE's extensive expertise in the chemical and biological sciences is also being leveraged to improve passive defenses against chemical and biological weapons (CW/BW). DOE's counterterrorism role includes supporting the Nuclear Emergency Search Team (NEST), responsible for detecting and rendering safe nuclear weapons and devices and providing consequence management of nuclear incidents. Components of both DoD and DOE provide valuable assistance supporting the lead role of the Federal Bureau of Investigation (FBI) in handling NBC counterterrorism activities in the U.S. The activities and programs of U.S. Intelligence for "countering proliferation" summarized in this report and in the companion "Intelligence Annex" (separately bound), address the broader intelligence efforts necessary to prevent, detect, and react to the proliferation of NBC/M and NBC terrorism.

1.1.4 Scope of Programs Reviewed by the CPRC. The CPRC reviews those DoD, DOE, and U.S. Intelligence programs "strongly related to countering proliferation." The CPRC defines programs strongly related to countering proliferation as those R&D, acquisition (including procurement), and Operational and Maintenance (O&M) programs: i) established and implemented in response to and consistent with NPRC/CPRC recommendations and which, if eliminated, would necessitate significant modification of the CPRC-endorsed initiatives to achieve the recommended improvements in capabilities outlined in previous NPRC/CPRC reports to Congress; and ii) other programs strongly related to countering proliferation which directly address the counterproliferation ACE priorities. In general, existing and ongoing DoD, DOE, and U.S. Intelligence programs strongly related to countering proliferation include those R&D, acquisition, and selected O&M programs that are directly related to the counterproliferation ACEs and that support the counterproliferation functional areas and the operational objectives for countering NBC/M proliferation and NBC terrorism defined in Section 1.2 below.

It should be noted that general purpose defense and defense infrastructure programs, such as acquisition programs for the various military weapon delivery platforms, are not considered to be strongly related to counterproliferation because they contribute to the basic capabilities of U.S. forces which underlie all military capabilities, not just those associated with countering NBC/M proliferation and NBC terrorist threats. Military construction programs are not considered for similar reasons – many of them underlie other military capabilities. Likewise, U.S. nuclear forces are also not included in the CPRC's review because of their fundamental role in ensuring the basic deterrence strategy of the United States. Such acquisition programs would still continue largely unaffected should NBC/M proliferation threats suddenly disappear.

In general, CPRC-endorsed initiatives leverage and augment existing and ongoing programs in order to accelerate program deliverables. DoD's Counterproliferation Support Program, established in direct response to a 1994 NPRC recommendation, is one example of a continuing CPRC initiative designed to accelerate the fielding of enhanced capabilities and technologies emerging from ongoing DoD R&D and acquisition programs. The Advanced Concept Technology Demonstration (ACTD) is the primary acquisition vehicle used to achieve rapid evaluation and fielding of new capabilities to the CINCs. For example, one of the areas of most concern to the CPRC has been the lack of deployed capabilities to detect, identify, and

provide timely warning of a BW attack. In response, DoD's Chemical and Biological Defense Program and the Joint Program Office for Biological Defense (JPO-BD) are conducting the Air Base/Port Bio Detection ACTD to improve BW detection and warning at air bases, ports, and other fixed facilities. The Counterproliferation Support Program is conducting, in conjunction with the JPO-BD and the Chemical and Biological Defense Program, the Joint Biological Remote Early Warning System (JBREWS) ACTD to accelerate the deployment of critical BW detection and early warning systems. It is also initiating the development, in conjunction with JPO-BD, the Army, and the Marine Corps, of a Consequence Management "911-BIO" ACTD to improve the emergency response to terrorist incidents involving BW threats. DOE is also participating in these ACTDs. In another area of significant concern to the CPKC, the Counterproliferation Support Program is continuing the accelerated development of a new generation of hardened and underground NBC/M target defeat and collateral effects prediction and mitigation capabilities that are being demonstrated as part of the ongoing Counterproliferation ACTD.

1.2 The Multi-Tiered Response to Countering Proliferation

1.2.1 Key Counterproliferation Functional Areas. Considering the complexities of facing an adversary armed with NBC/M, the CPKC places a high priority on proliferation prevention. Realizing, however, that efforts to halt the proliferation of NBC/M may not always be entirely successful, DoD must prepare U.S. forces to fight, survive, and prevail in any conflict involving the use of NBC weapons by an adversary. The CPKC-represented organizations have developed a multi-tiered response to counter NBC/M threats that seeks to devalue their perceived utility and, consequently, to make their acquisition unattractive to a would-be proliferant, while at the same time assuring that U.S. forces can prevail in any conflict involving adversarial use of these weapons. These underpinnings of deterrence are achieved by aggressively pursuing capability improvements in the following seven key counterproliferation functional areas, illustrated in Figure 1.1 and defined below.

- ***Proliferation Prevention*** – to deny attempts by would-be proliferants to acquire or expand their NBC/M capabilities by: providing inspection, monitoring, verification, and enforcement support for nonproliferation treaties and NBC/M arms control regimes; supporting export control activities; assisting in the identification of potential proliferants before they can acquire or expand their NBC/M capabilities; and, if so directed by the National Command Authority, planning and conducting interdiction operations;
- ***Strategic and Tactical Intelligence*** – to provide to policy and operational organizations actionable foreign intelligence on the identity and characterization of activities of existing or emerging proliferant states and groups in order to support U.S. efforts to prevent the acquisition of NBC/M weapons and technology, cap or roll back existing programs, deter weapons use, and adapt military forces and emergency assets to respond to these threats;
- ***Battlefield Surveillance*** – to detect, identify, and characterize enemy NBC/M forces and associated infrastructure elements (using DoD and intelligence assets) in a timely manner

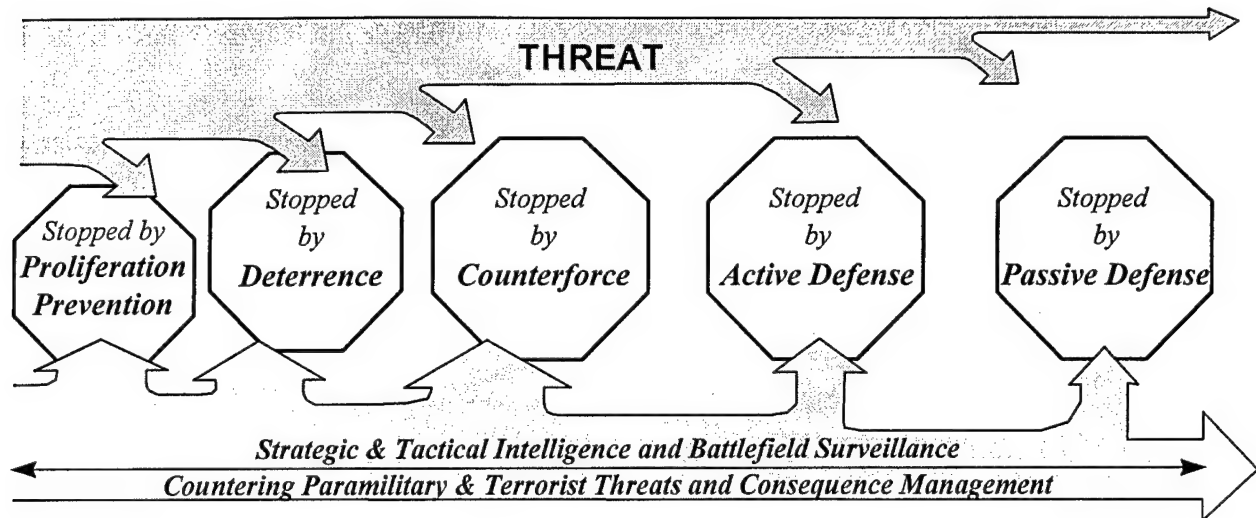


Figure 1.1 Countering Proliferation: A Multi-Tiered Approach

to support combat operations, such as targeting and mission/strike planning activities, and provide timely post-strike battle damage assessment (BDA);

- **Counterforce** – to target (using battlefield surveillance and other intelligence assets), plan attacks, deny, interdict or destroy, and rapidly plan and conduct restrikes as necessary against hostile NBC/M forces and their supporting infrastructure elements while minimizing collateral effects;
- **Active Defense** – to protect U.S., allied and coalition forces, and noncombatants by intercepting and destroying or neutralizing NBC weapons delivered by ballistic and cruise missiles and aircraft, while minimizing collateral effects that might arise during all phases of intercept;
- **Passive Defense** – to protect U.S., allied, and coalition forces against NBC weapons effects associated with NBC/M use, including measures to detect and identify NBC agents, individual and collective protection equipment for combat use, NBC medical response, vaccines for BW defense, and NBC decontamination technologies; and
- **Countering Paramilitary, Covert Delivery, and Terrorist NBC Threats** – to protect military and civilian personnel, facilities, and logistical/mobilization nodes from this special class of NBC threats and manage the consequences of these threats both in the U.S. and abroad.

The activity and program descriptions provided in Sections 5 - 8 are generally organized with respect to these functional areas.

1.2.2 Operational Objectives. To meet mission objectives for countering proliferation and ensure that related interdepartmental R&D and acquisition programs lead to deployed

capabilities that satisfy the requirements of the combatant CINCs, key operational objectives have been identified by the CPRC and are listed in Table 1.1 for each counterproliferation functional area. When shortfalls are identified, CPRC-endorsed initiatives will be established to improve U.S. capabilities in a timely manner by accelerating the fielding of technologies and capabilities that satisfy the operational requirements of the CINCs and other U.S. Government organizations.

1.3 The New Counterproliferation ACEs for 1997

Evolution of the Counterproliferation ACEs. The ACEs were first defined by the CPRC in their 1995 report to Congress. They were developed by combining the NPRC's "Areas for Progress" with the Joint Staff and CINC prioritized counterproliferation capabilities established by the Deterrence/Counterproliferation Joint Warfighting Capabilities Assessment (JWCA) team. The ACEs were established to characterize those areas where progress is needed to enhance both the warfighting capabilities of the CINCs and the overall ability to satisfy the demands of U.S. nonproliferation and counterproliferation policy. The prioritization of the ACEs has generally

Table 1.1: Operational Objectives for Countering Proliferation

Counterproliferation Functional Area	Objectives
<ul style="list-style-type: none"> • Proliferation Prevention 	<ul style="list-style-type: none"> • Effective and Cooperative Interagency Support in Export Controls, Treaty Verification, and Inspection Support • Detection, Tracking, and Protection of NBC/M Associated Materials, Components, and Technologies • Effective and Timely Data Correlation and Fusion
<ul style="list-style-type: none"> • Strategic and Tactical Intelligence 	<ul style="list-style-type: none"> • Provide Accurate, Comprehensive, Timely, and Actionable Foreign Intelligence in Support of National Strategy for Countering Proliferation • Effective/Timely Dissemination of Operational Intelligence to Users
<ul style="list-style-type: none"> • Battlefield Surveillance 	<ul style="list-style-type: none"> • Accurate NBC/M Target Identification and Characterization • Time Urgent Response • Prompt, Reliable Post-Strike Damage Assessment and BDA
<ul style="list-style-type: none"> • NBC/M Counterforce 	<ul style="list-style-type: none"> • High Kill/Neutralization Probability against Hardened, Underground, and Mobile NBC/M Targets • Collateral Effects Characterization, Minimization, and Neutralization • Time Urgent Response • Prompt Targeting and Strike/Restrike Planning
<ul style="list-style-type: none"> • Active Defense 	<ul style="list-style-type: none"> • Cost-Effective, Wide Area, Low Leakage Active Air and Missile Defenses • Collateral Effects Minimization/Neutralization
<ul style="list-style-type: none"> • Passive Defense 	<ul style="list-style-type: none"> • Prompt, Accurate NBC Agent Detection, Identification, and Early Warning • Individual and Collective Protection, Decontamination, Medical Response, and Post Exposure Therapies that Minimize Casualties, Performance Degradation, and Operational and Logistical Impacts • Availability of Effective BW Vaccines
<ul style="list-style-type: none"> • Countering Paramilitary, Covert Delivery, and Terrorist NBC Threats 	<ul style="list-style-type: none"> • Joint Interagency Readiness against NBC Threats in the U.S. and Overseas • Prompt, Effective World-Wide Response • Timely and Effective Consequence Management

followed the prioritization of the CINCs' required counterproliferation capabilities. The May 1996 CPRC report to Congress characterized the ACEs as "defin[ing] those priority areas where additional capabilities are required to meet the challenges posed by WMD proliferation threats. They prioritize the counterproliferation-related responses to interdepartmental policy needs and, in particular, reflect the operational requirements of the Unified Commands for countering proliferation." The ACEs serve a variety of purposes including: "guid[ing] the CPRC's program review process"; providing "a unified basis for reviewing and assessing future progress in meeting counterproliferation and related nonproliferation mission needs" of the CPRC-represented organizations; providing broad guidelines for R&D and acquisition program investments; and defining programs that are "strongly related to countering proliferation", which are those programs that address, or are directly related to, the ACE priorities.

Last year, the CPRC recommended that the ACEs be reviewed and reprioritized as necessary in order to "ensure that they continue to reflect the integration of CINC warfighting priorities and the overarching national security objectives they support." The CPRC was confident that this ACE reprioritization would "serve to improve the focus of future programmatic and managerial efforts to counter the threat of WMD proliferation." The review and reprioritization of the ACEs was completed under the auspices of the CPRC Standing Committee. The Standing Committee decided that this year each CPRC-represented organization would prioritize the ACEs in accordance with their own departmental missions to more accurately reflect each organization's response to countering proliferation. Table 1.2 lists the new counterproliferation ACEs for 1997 and includes the prioritizations of each CPRC-represented organization.

Summary of the CPRC's ACE Review. The CPRC directed the CPRC Action Officers, under the auspices of the CPRC Standing Committee, to review the ACEs and recommend modifications for CPRC consideration. The Action Officers relied on several sources of information to support their review, including: i) the "Prioritized CINC Staff Counterproliferation Required Capabilities" developed during Operational Planning Workshops conducted by the Joint Staff with each of the CINCs (see subsection 5.1.2); ii) results of studies and analyses conducted in support of budget development processes of the CPRC-represented organizations, including the 1996 Counterproliferation Study (see subsection 5.1.3); and iii) growing government-wide concerns about the potential for NBC terrorist threats. Represented organizations included: each of the Services, the Joint Staff, Office of the Secretary of Defense (ATSD(NCB), ASD(SO/LIC), ASD(International Security Policy), and ASD(Command, Control, Communications and Intelligence)), DoD Agencies, DOE, U.S. Intelligence, the National Security Council (NSC), and the Office of Management and Budget (OMB). The CPRC Standing Committee members and Action Officers participating in the ACE review are listed in Appendix B.

Table 1.3 summarizes the ACE modifications approved by the CPRC Standing Committee acting on behalf of the CPRC. The side-by-side comparison is ordered using the DoD prioritization of the ACEs. The key changes made in the ACEs since last year's report are summarized below.

Increased Priority of Countering Paramilitary and Terrorist NBC Threats. The ACEs dealing with support for Special Operations Forces (SOF) and defending against paramilitary and

Table 1.2: New ACEs and ACE Priorities of the CPRC-Represented Organizations

ACE Priorities			Areas for Capability Enhancements (ACEs)
DoD*	DOE	US INTELL	
1	3	1	Detection, Identification, and Characterization of BW Agents
2	6	3	Detection, Characterization, and Defeat of NBC/M Facilities with Minimal Collateral Effects
3	8	4	Detection, Characterization, and Defeat of Underground Facilities with Minimal Collateral Effects
4	-	2	Theater Ballistic Missile Active Defense**
5	2	5	Support for Special Operations Forces and Defense Against Paramilitary, Covert Delivery, and Terrorist NBC Threats
6	4	6	Provide Consequence Management
7	-	7	Cruise Missile Defense
8	7	8	Collection, Analysis, and Dissemination of Actionable Intelligence to Counter Proliferation
9	-	13	Robust Passive Defense to Enable Sustained Operations on the NBC Battlefield
10	-	9	BW Vaccine RDT&E and Production to Ensure Stockpile Availability
11	-	14	Target Planning for NBC/M Targets
12	-	11	Prompt Mobile Target Detection and Defeat
13	1	15	Detection, Tracking, and Protection of NBC/M and NBC/M-Related Materials and Components
14	9	12	Support Export Control Activities of the U.S. Government
15	5	10	Support Inspection and Monitoring Activities of Arms Control Agreements and Regimes

* includes both the OSD and JCS

** National Missile Defense is associated with this ACE. (See discussion in Section 2.2.)

terrorist NBC threats (old ACEs #12 and #13, respectively) were raised in priority and combined. While there was concern that combining these ACEs might have a diluting effect on the perceived range of SOF roles in countering proliferation (e.g., in intelligence collection), both the increased priority and the combining of these ACEs are consistent with the CINCs' counterproliferation required capabilities (see Table 5.1). The importance of managing the consequences of an incident involving NBC weapons effects, i.e., "Consequence Management", was also recognized by the CPRC as a critical capability shortfall and led to the creation of a new ACE.

Table 1.3: Summary of ACE Modifications

Old ACEs (1996)	Correspondence	Revised ACEs (in DoD Priority Order)
1. Detection, Identification, and Characterization of <i>BW/CW</i> Agents	→	1. Detection, Identification, and Characterization of <i>BW</i> Agents
2. Cruise Missile Defense	→	2. <i>Detection, Characterization, and Defeat of NBC/M Facilities with Minimal Collateral Effects*</i>
3. Theater Ballistic Missile Defense	→	3. <i>Detection, Characterization, and Defeat of Underground Facilities with Minimal Collateral Effects*</i>
4. Detection, Characterization, and Defeat of Underground WMD Facilities	→	4. Theater Ballistic Missile <i>Active</i> Defense
5. Collection, Analysis, and Dissemination of Actionable Intelligence <i>to the Warfighter</i>	→	5. Support for Special Operations Forces and Defense Against Paramilitary, Covert Delivery, and Terrorist <i>NBC</i> Threats
6. Robust Passive Defense to Enable <i>Continued</i> Operations on the NBC Battlefield	→	6. <i>Provide Consequence Management*</i>
7. BW Vaccine RDT&E and Production to Ensure Availability	→	7. Cruise Missile Defense
8. Target Planning for WMD Targets	→	8. Collection, Analysis, and Dissemination of Actionable Intelligence <i>to Counter Proliferation</i>
9. BW/CW Agent Defeat	→	9. Robust Passive Defense to Enable <i>Sustained</i> Operations on the NBC Battlefield
10. Detection and Tracking of WMD and WMD-Related Shipments	→	10. BW Vaccine RDT&E and Production to Ensure <i>Stockpile</i> Availability
11. Prompt Mobile Target Detection and Defeat	→	11. Target Planning for <i>NBC/M</i> Targets
12. Support for Special Operations Forces	→	12. Prompt Mobile Target Detection and Defeat
13. Defend Against Paramilitary, Covert Delivery, and Terrorist WMD Threats	→	13. Detection, Tracking, and <i>Protection</i> of <i>NBC/M</i> and <i>NBC/M</i> -Related <i>Materials and Components</i>
14. Support Export Control Activities of the U.S. Government	→	14. Support Export Control Activities of the U.S. Government
15. Support Inspection and Monitoring Activities of <i>Verifiable</i> Arms Control Agreements and Regimes	→	15. Support Inspection and Monitoring Activities of Arms Control Agreements and Regimes

* *New ACE for 1997*

● - Denotes Clarification/Wording Change (in italics)

Increased Priority of Countering NBC/M and Underground Targets. Two new ACEs were defined (based on old ACE #4) to clarify the importance of correcting shortfalls in the detection, characterization, and defeat of *both* NBC/M facilities *and* underground facilities. These two new ACEs were also increased in priority. Detection and characterization of underground targets, whether NBC/M-related or not, are real concerns for U.S. Intelligence, further warranting a high priority ACE. Defeat of NBC/M facilities is given a higher priority over general underground facility defeat (by all CPRC-represented organizations) to reflect the focus of the counterproliferation community on countering NBC weapons. These ACEs were also modified to underscore the importance of minimizing collateral effects when attacking both NBC/M and non-NBC/M facilities. With the addition of the phrase “with Minimal Collateral Effects”, it was considered redundant to retain the “BW/CW Agent Defeat” ACE (old ACE #9), which was subsumed into the new DoD ACE priority #2.

Focus on Biological Warfare Agent Detection. ACE priority #1 was modified to focus solely on BW agents and, thereby, more accurately represent the critical shortfalls in BW agent detection, identification, and characterization. CW agent detection and identification remain critical to maintaining a robust passive defense (DoD ACE priority #9).

Broadening the NBC/M Detection and Tracking ACE. Old ACE #10 was clarified and broadened to include “Protection” of “NBC/M and NBC/M-Related *Materials and Components*”, and no longer refers solely to “Shipments”. Stated this way, the ACE now more accurately encompasses the activities of DOE’s Material Protection, Control, and Accounting Program designed to protect critical nuclear materials in FSU states. (See subsection 6.3.4.) The revised wording is also more representative of the functions of DoD’s Cooperative Threat Reduction Program and the activities of the Defense Technology Security Administration. (See Section 5.2).

Clarifications and Wording Changes. The term “WMD” was replaced with “NBC/M” or “NBC” (as appropriate) in new ACEs 2, 5, 11, and 13 for consistency and to add more specificity to these ACEs. Clarifications and/or wording changes were also made in five other ACEs. Old ACE #3 was clarified to read “Theater Ballistic Missile *Active* Defense” to more accurately specify its intended meaning of *in flight intercept* of theater ballistic missiles. Old ACE #5 was modified by replacing “Collection, Analysis, and Dissemination of Actionable Intelligence *to the Warfighter*” with “. . . *to Counter Proliferation*”, which more accurately reflects the broader counterproliferation-related mission of U.S. Intelligence. Old ACE #7, was clarified to ensure BW vaccine “*Stockpile Availability*”. Old ACE #15, dealing with support for arms control treaties, was modified by deleting the adjective “verifiable”, in order to broaden the scope of supportable arms control agreements. A minor clarification in old ACE #6 was also made, replacing “Continued Operations” with “*Sustained Operations*”.

1.4 Organization of the Report

The remainder of the report is organized as follows. Section 2 reviews the findings and recommendations of the CPRC made in last year’s report and summarizes the CPRC’s approach for reviewing and assessing future progress in activities and programs related to countering proliferation and NBC terrorism. Section 3 provides an updated overview of worldwide NBC/M

proliferation and NBC terrorist threats, and Section 4 summarizes national and departmental policy perspectives and implementation strategies for dealing with these threats. Section 5 provides detailed descriptions of DoD activities and programs which are strongly related to counterproliferation and that directly address the counterproliferation ACEs. Program accomplishments, new initiatives, key milestones, and other new developments achieved since the 1996 CPRC report was issued are highlighted. DOE nonproliferation programs related to countering proliferation, including new initiatives and accomplishments, are discussed in Section 6. U.S. Intelligence programs and activities to counter proliferation are briefly described in Section 7, with the details provided in the separately bound "Intelligence Annex" to this report. The integrated DoD, DOE, and U.S. Intelligence responses to field improved capabilities and technologies to counter NBC paramilitary and terrorist threats are reviewed together in a separate section, Section 8, in recognition of recent Congressional action specifically enumerating CPRC responsibilities in this area. The findings and recommendations of the CPRC are provided in Section 9, which summarizes the integrated interdepartmental response for countering NBC/M proliferation and NBC terrorism.

Five appendices are also included in the report: Appendix A provides excerpts of the statutes which define the scope and responsibilities of the CPRC; Appendix B lists the CPRC program review participants; Appendix C provides tabular summaries of DoD activities and programs strongly related to countering NBC/M proliferation and terrorist NBC threats, including key program accomplishments, milestones, and budget profiles for FY 1998; Appendix D provides DOE's FY 1998 budget profile for its nonproliferation activities and programs strongly related to countering proliferation; and an acronym list is provided in Appendix E. Finally, a separately bound Intelligence Annex has been prepared by U.S. Intelligence to describe joint U.S. Intelligence, DoD, and DOE intelligence programs related to countering proliferation.

2. Status of the CPRC's 1996 Findings and Its Approach to Assessing Future Progress

This section contains a summary of the status of the CPRC's 1996 findings and recommendations, an overview of the progress in addressing the counterproliferation ACEs (in terms of investments by the CPRC-represented organizations), and a brief description of the CPRC's basic approach for assessing future progress in meeting the policy and strategy objectives for countering NBC/M proliferation and NBC terrorism as embodied in the ACEs.

2.1 Summary of the CPRC's 1996 Findings and Recommendations

The key CPRC finding of last year was that the seriousness of the NBC/M proliferation threat and the need to enhance capabilities to counter it were being recognized throughout the DoD (including OSD, the Joint Staff, Services, and CINCs), the DOE, and U.S. Intelligence. Citing the many accomplishments documented in last year's report, it was clear to the CPRC that "countering proliferation" had indeed become an established and institutionalized priority within each of the CPRC-represented organizations. The CPRC made several recommendations to continue and strengthen the interdepartmental response to countering proliferation, and the progress made to date on implementing each of these recommendations is summarized below.

Approval of the Counterproliferation-Related Budgets of the CPRC-Represented Organizations. To continue the progress being made in strengthening U.S. capabilities, including initiatives leading to rapid fielding of essential capabilities and improved integration and management oversight of counterproliferation-related programs, the CPRC urged Congress to approve the President's FY 1997 and out-year budgets of DoD, DOE, and U.S. Intelligence related to countering proliferation. Congress approved most of the President's FY 1997 budget request and supplemented it in key areas. The President's FY 1998 budget request is nearly \$5.4 billion in combined DoD and DOE counterproliferation-related activities and programs, a 15% increase over the FY 1997 request. The CPRC-represented organizations continue to treat nonproliferation and counterproliferation needs and requirements as a high priority item in their budget development processes. (Details of the U.S. Intelligence budget for countering proliferation are provided in the Intelligence Annex to this report.)

Continue the CPRC Program Review Process. Recognizing that countering proliferation is a continuing challenge that will have to be addressed for the foreseeable future, the CPRC thought it prudent to continue the CPRC program review process beyond its statutorily mandated term, which was set to expire at the end of FY 1996. Congress extended the authority of the CPRC through FY 2000 in the 1997 NDAA. Furthermore, in recognition of the growing potential threat of paramilitary and terrorist NBC threats, Congress expanded the authority of the CPRC to review DoD, DOE, and U.S. Intelligence R&D and acquisition activities and programs developing capabilities and technologies for countering these threats.

Continue Close Coordination of R&D and Acquisition Programs among DoD, DOE, and U.S. Intelligence. Planning, coordination, and other activities related to management

oversight expanded significantly in response to CPRC recommendations. The newly established CPRC Standing Committee is serving as a proactive vehicle to ensure continued close cooperation among the CPRC-represented organizations and coordination of their R&D, acquisition, and management activities which have characterized their integrated response in meeting ACE priorities to date. In addition to the Standing Committee, CPRC Action Officers, representing a variety of organizations within the DoD (including OSD, the Joint Staff, Services, and DoD Agencies), DOE, U.S. Intelligence, NSC, and OMB meet regularly to address interorganizational issues related to countering NBC/M proliferation and NBC terrorism. Many CPRC Action Officers also serve on other interagency organizations, like the Nonproliferation and Arms Control Technical Working Group (NPAC TWG) and the Technical Support Working Group (TSWG) of the National Security Council's (NSC) Interagency Working Group on Counterterrorism, further enhancing interdepartmental and interagency coordination.

Establish a Joint DOE, DoD, and U.S. Intelligence R&D Initiative in Chemical and Biological Defense. DOE, in conjunction with DoD and U.S. Intelligence, established the Chemical and Biological Nonproliferation Program to leverage DOE's extensive expertise in the chemical and biological sciences resident in the National Laboratories. Based on a joint DoD, DOE, and U.S. Intelligence tour of the eight DOE National Laboratories (organized by ATSD(NCB)'s Deputy for Counterproliferation) conducted last summer and through thorough interdepartmental and interagency coordination, several projects were identified for FY 1997 funding. These projects leverage and fill gaps in ongoing DoD and U.S. Intelligence R&D programs and were selected based on their ability to expedite the development and rapid fielding of advanced capabilities to meet the chemical and biological defense and counterproliferation needs of DoD (including the CINCs, Services, and DoD Agencies), U.S. Intelligence, and other users from the nonproliferation, counterproliferation, and counterterrorism communities. (See Section 6.2 for additional information.)

Increase International Cooperative Efforts to Counter Proliferation. To expedite and more efficiently and effectively meet the challenges posed by the global proliferation problem, the CPRC continues to encourage and endorse expanded cooperation with international partners in countering NBC/M proliferation and NBC terrorist threats. DoD is continuing to work with friends, allies, and potential coalition partners in Europe, the Pacific region, and the Middle East to develop common approaches on counterproliferation and NBC defense. For example, the North Atlantic Treaty Organization (NATO) Senior Defense Group on Proliferation (DGP) is continuing to develop a core, integrative set of capability enhancements and force improvements to counter NBC/M threats, particularly for forces operating beyond the NATO periphery. DOE continues to work closely with international organizations, including the International Atomic Energy Agency (IAEA), to prevent the proliferation of nuclear materials. International cooperative activities demonstrate that the U.S. is not alone in its concerns for the defense dimension of NBC/M proliferation. The CPRC-represented organizations remain committed to building international partnerships with allies and friends whose security and national interests are threatened by NBC/M proliferation.

Review and Reprioritize the Counterproliferation ACEs. As discussed in Section 1.3, the review and reprioritization of the ACEs was completed by the CPRC Action Officers under the auspices of the CPRC Standing Committee. While this year each CPRC-represented organization

prioritized the ACEs based on their specific mission needs, there was unanimous agreement on the modified ACE list as a whole. Furthermore, in recognition of growing concerns about NBC terrorism as a significant national security threat and the disturbing trends of rogue states to protect and conceal their NBC/M infrastructure elements, ACEs dealing with countering NBC paramilitary and terrorist threats and countering NBC/M and underground facilities and infrastructure elements were increased in priority.

2.2 Progress in Addressing the Counterproliferation ACEs

DoD, DOE, and U.S. Intelligence have each made serious commitments to address the threat posed by the proliferation of NBC/M and NBC terrorism. Table 2.1 summarizes the FY 1998 investments planned by DoD and DOE for each ACE priority. U.S. Intelligence's FY 1998 investments are discussed in the Intelligence Annex. The combined DoD/DOE investment for FY 1998 is nearly \$5.4 billion compared to just under \$4.7 billion in FY 1997, a 15% increase. DoD's investment for FY 1998 is almost \$4.9 billion, which compares favorably with last year's investment of just under \$4.3 billion (more than a 14% increase). DoD budgets the bulk of its counterproliferation investment in the areas of air and missile defense (DoD ACE priorities 4 and 7); supporting the inspection and monitoring of arms control agreements (DoD ACE priority 15); maintaining a robust passive defense to enable sustained operations in an NBC contaminated environment (DoD ACE priority 9); detection and characterization of BW agents (DoD ACE priority 1); and prompt mobile target detection and defeat (DoD ACE priority 12).

DOE's investment for FY 1998 is \$489.4 million, up 19% from FY 1997 and up 25% from FY 1996. DOE's nonproliferation focus results in concentration of its investment in tracking, protecting, and controlling nuclear weapon related materials and components (DOE ACE priority 1); supporting inspection and monitoring activities of arms control agreements (DOE ACE priority 5); defending against and managing the consequences of covert delivery and terrorist NBC threats (DOE ACE priorities 2 and 4); detection, identification, and characterization of BW agents through its new Chemical and Biological Nonproliferation Program (DOE ACE priority 3); and supporting export control activities (DOE ACE priority 9).

While the higher priority ACEs generally receive greater investment, the distribution of investments among the ACEs shows some variability. This is due to a variety of factors, including variation in the state-of-the-art and maturity of key enabling technologies, differing development stages of program evolution, unequal opportunities for near-term (versus longer term) payoffs, and due to the fact that some ACEs simply will require greater investment than others (e.g., those requiring extensive R&D). Consequently, it is difficult to judge progress in the counterproliferation ACEs simply by looking at the budget numbers. It requires a closer look at the accomplishments and planned milestones of all the programs addressing each of the ACEs – the subject of Sections 5 - 8 of the report.

It must also be noted that several DoD and DOE programs related to countering proliferation respond to multiple ACE priorities. In these cases, budget values listed in Table 2.1 are included under the ACE priority corresponding to the primary thrust of the program. (In the activity and program descriptions provided in Sections 5 - 8 and in Appendices C and D, the ACE

Table 2.1: Investments in the Counterproliferation ACEs

ACE Priority			Counterproliferation ACEs	Counterproliferation Related Investments for FY 1998 [\$M]		
DoD	DOE	US INTELL		DoD	DOE	US INTELL*
1	3	1	Detection, Identification, and Characterization of BW Agents	191.1	19.0	
2	6	3	Detection, Characterization, and Defeat of NBC/M Facilities with Minimal Collateral Effects	83.8	- **	
3	8	4	Detection, Characterization, and Defeat of Underground Facilities with Minimal Collateral Effects			
4	-	2	Theater Ballistic Missile Active Defense***	3,217.5	-	
5	2	5	Support for Special Operations Forces and Defense Against Paramilitary, Covert Delivery, and Terrorist NBC Threats	151.1	41.1	
6	4	6	Provide Consequence Management	21.5		
7	-	7	Cruise Missile Defense	18.1	-	
8	7	8	Collection, Analysis, and Dissemination of Actionable Intelligence to Counter Proliferation	0.8*	- *	
9	-	13	Robust Passive Defense to Enable Sustained Operations on the NBC Battlefield	364.9	-	
10	-	9	BW Vaccine RDT&E and Production to Ensure Stockpile Availability	64.5	-	
11	-	14	Target Planning for NBC/M Targets	5.7	-	
12	-	11	Prompt Mobile Target Detection and Defeat	178.0	-	
13	1	15	Detection, Tracking, and Protection of NBC/M and NBC/M-Related Materials and Components	3.0	297.2	
14	9	12	Support Export Control Activities of the U.S. Government	16.2	16.5	
15	5	10	Support Inspection and Monitoring Activities of Arms Control Agreements and Regimes	569.9	115.6	
* Please see the Intelligence Annex to this report. ** Activities included in DOE National Laboratories "Work for Others" programs. *** includes funding for National Missile Defense (The projected pace of NMD technical advancement is limited by the progress of technology, not by funding.)				• TOTALS:	4,886.1	489.4

priority listed first in the tabular summaries represents the primary thrust of the activity or program.) For example, while programs developing BW detection systems clearly support robust passive defense capabilities (i.e., DoD ACE priority 9), their primary thrust is addressing DoD ACE priority 1. Likewise, several active defense systems under development have some capability to defend against cruise missiles, but, since their primary focus is ballistic missile defense, they are included under DoD ACE priority 4. The ACEs, like the CINCs' counterproliferation required capabilities, primarily focus on theater missile defense where the NBC/M proliferation threat is more immediate and substantial. However, as longer range NBC/M threats proliferate, National Missile Defense (NMD) will take on added counterproliferation significance. The NMD program

both benefits from and enriches (through technology sharing and synergy) the technology base for theater missile defense. Finally, there is considerable overlap in DoD technologies and capabilities to detect, characterize, and defeat NBC/M and underground facilities, hence contributions in DoD ACE priorities 2 and 3 are difficult to distinguish. The CPRC acknowledges that the investment breakout represented in Table 2.1 is necessarily subjective. It, nevertheless, provides a useful means, in broad terms, to characterize the commitments of DoD, DOE, and U.S. Intelligence in meeting the challenges posed by the counterproliferation ACEs.

2.3 An Approach for Assessing Future Progress

The key objectives of the CPRC's interdepartmental coordination process is to ensure that R&D and acquisition activities and programs address national policy and strategy objectives and provide a timely response to meeting the challenges posed by NBC/M proliferation and NBC terrorist threats. This logical sequence is illustrated in Figure 2.1, which also identifies the key ingredients guiding the CPRC's program review process (i.e., national policy and strategy objectives, the CINC's counterproliferation required capabilities, the ACEs, and departmental budgeting activities). The CPRC's program review process seeks to: i) determine if current program requirements are sufficient to meet current and future threats; ii) determine if current programs are adequate to meet requirements; iii) assess current and future capabilities; iv) identify current capability shortfalls and anticipate future shortfalls; v) continue to define and prioritize the ACEs to guide investments in addressing remaining shortfalls; vi) identify candidate areas for progress (or program options) for consideration within departmental budgeting activities to address current and near-term capability shortfalls; and vii) define new requirements for future programs to

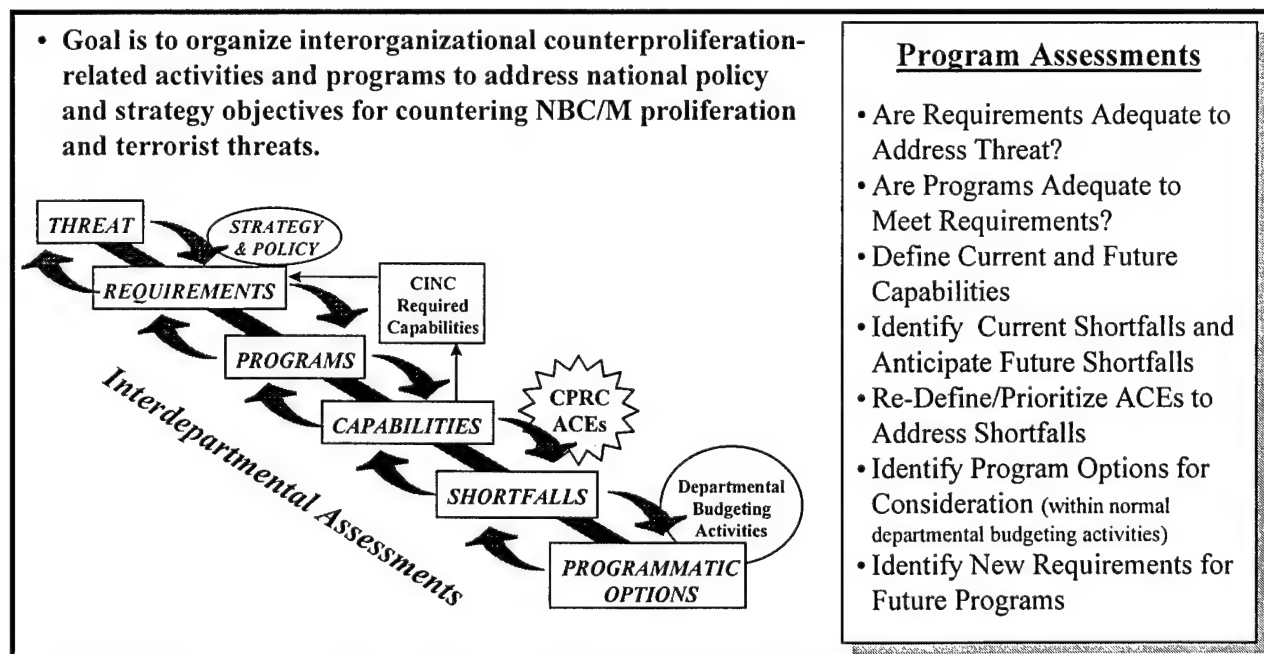


Figure 2.1 Goals and Objectives of the CPRC Program Review Process

address longer term anticipated shortfalls. The approach is designed to produce a more forward looking and better integrated response to counter NBC/M proliferation and terrorist threats.

The CPRC's annual review process is designed to tie activities and programs to key policy and strategy objectives for countering proliferation, while articulating a clear threat-response linkage between NBC/M proliferation and NBC terrorist threats and the interorganizational response established to counter these threats. This structured methodology, illustrated in Figure 2.2, is the mechanism by which the CPRC seeks to fulfill its responsibilities to: i) optimize funding and ensure the efficient development and timely deployment of effective technologies and capabilities to counter NBC/M proliferation and terrorist threats; ii) eliminate undesirable redundancies in R&D and acquisition programs; and iii) establish priorities for projects and funding. In this way, the CPRC seeks to ensure the credibility of the multi-tiered approach to countering proliferation and, in parallel, ensure that each of the key counterproliferation functional areas and operational objectives, defined in Section 1.2 and embodied in the ACEs, are adequately and prudently addressed.

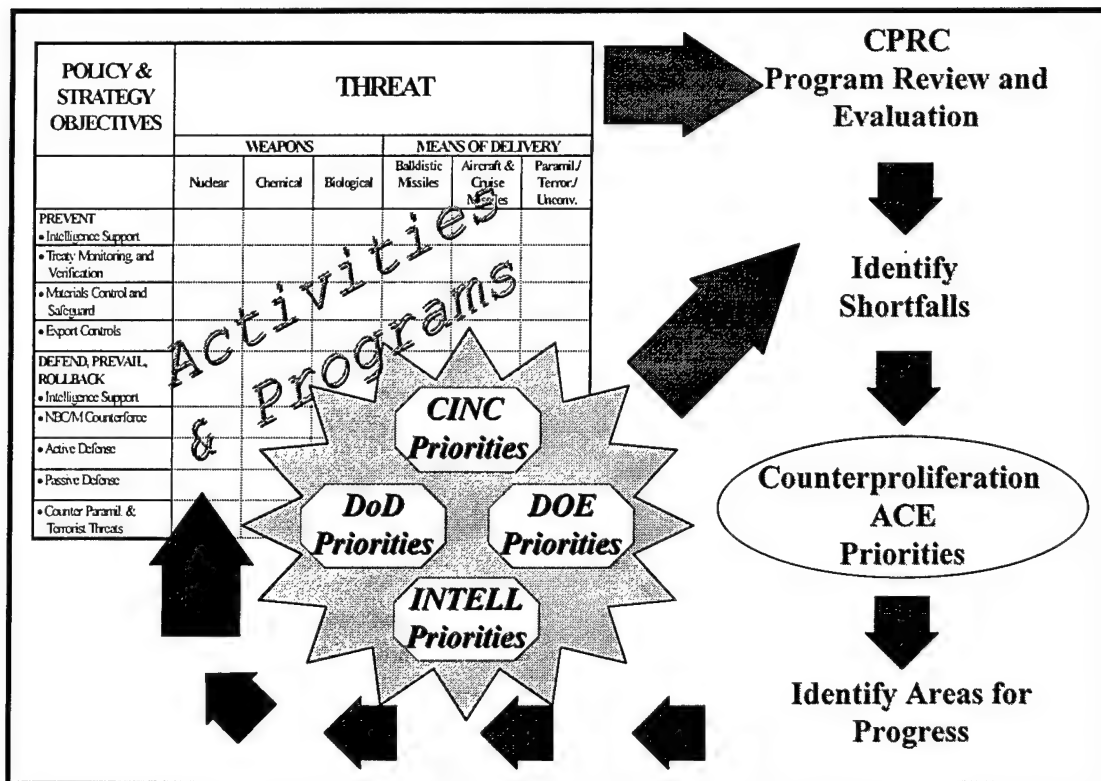


Figure 2.2 The CPRC Program Review Process

3. The Continuing Threat of NBC/M Proliferation and NBC Terrorism

This section is devoted to a description by U.S. Intelligence of NBC/M proliferation and NBC terrorist threats. These threats drive the policy, strategy, and R&D and acquisition program responses discussed in the subsequent sections of this report. Topics discussed in this section include the global scope of the problem, the threat of nuclear diversion, the CW/BW terrorist threat, the military threat of CW/BW and their means of delivery. A brief country study of Iraq's BW and CW programs is also provided.

3.1 Introduction: Scope of the Problem

At least 20 countries – some of them hostile to the United States – already have or may be developing nuclear, biological, or chemical weapons, or their missile delivery systems. Others are heavily engaged in the sale or transfer of NBC/M technology. Chemical and/or biological weapons are believed to have been used in recent conflicts (e.g., the Iran - Iraq War), and, as the 1995 Tokyo subway incident shows, terrorist attacks using CW agents have become a reality. The NBC/M problem is serious and growing, and, as illustrated in Figure 3.1, it is global — politically, economically, militarily, and technologically.

• The Cold War, and the period of stability which accompanied global deterrence, is over. Unstable regimes, shifting regional power balances, and terrorism dominate the landscape today. The potential for catastrophic use of NBC weapons is greater than it has been in many decades. Intelligence on the potential use of NBC/M is crucial in efforts to control emerging NBC/M crises or avoid imminent disasters.

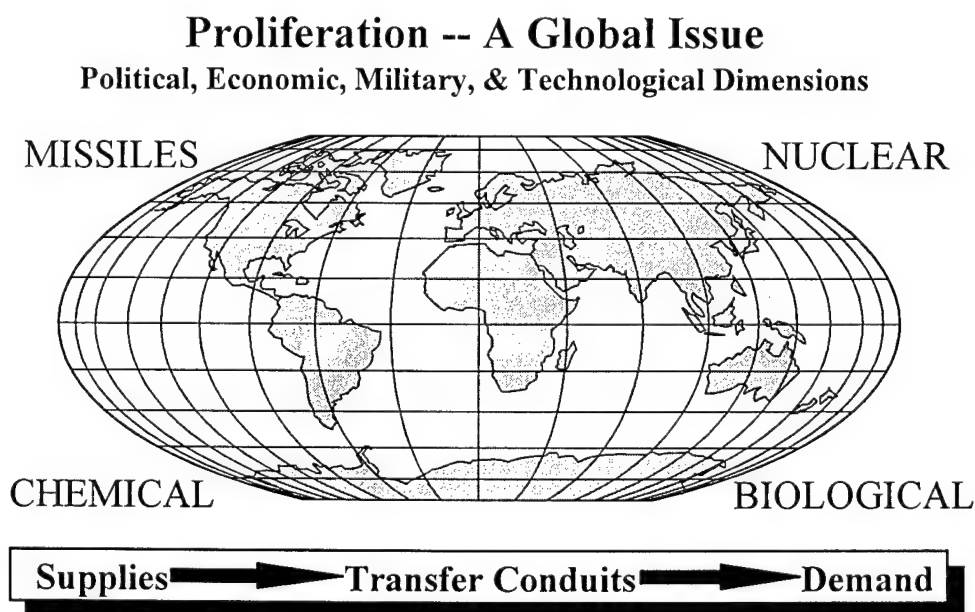


Figure 3.1 Proliferation — A Global Problem

In the event that the use of force becomes necessary, military forces are being equipped and trained to operate in an NBC environment. The success of such efforts depends heavily on intelligence to identify the specific threats forces will face at a given location and time. The potential for rapid proliferation of sophisticated biological and chemical capabilities makes this problem even more urgent today. In order to combat the NBC/M threat, U.S. and allied forces must know the characteristics of that threat *very well*. Military intelligence needs are specific and detailed, with a high premium on rapid delivery of analytical products in an operational environment.

In recognition of the serious threat posed by NBC/M proliferation, U.S. Intelligence has developed, and is implementing, a strategic plan which draws on the resources of the entire Intelligence Community. These intelligence activities are closely coordinated with activities in the policy, defense, and law enforcement communities. In many cases, the activities are joint. The goal is to provide policy makers with the intelligence support they need to:

- Prevent the acquisition of NBC/M – and of related technology and technical insight – by countries and terrorist organizations seeking such capabilities;
- Roll back existing programs and capabilities worldwide;
- Deter the use of these weapons; and
- Adapt military forces and emergency assets to respond to the threat posed by these weapons.

The following sections examine various facets of the NBC/M proliferation threat, including: the threat of nuclear diversion from the FSU; the CW/BW terrorist threat; and the military threat posed by CW/BW, ballistic and cruise missiles, and underground and hardened NBC facilities. In addition, a brief study of Iraq's CW/BW programs is also provided. For additional information on proliferation threats, the reader is referred to the April 1996 OSD report entitled *Proliferation: Threat and Response*.

3.2 The Threat of Nuclear Diversion

Although the threat of a massive nuclear attack involving hundreds or even thousands of nuclear weapons from the FSU has diminished, other threats have arisen: the potential acquisition of nuclear materials or even nuclear weapons by states hostile to the United States or by terrorists intent on staging incidents harmful to U.S. interests.

The chilling reality is that nuclear materials, technologies, and expertise are more accessible now than at any other time in history – due in part to the dissolution of the Soviet Union and the region's worsened economic conditions and political instabilities. This problem is exacerbated by the increasing diffusion of modern technology through the growth of the world

market, making it harder to detect illicit diversions of materials and technologies relevant to a nuclear weapons program.

U.S. Intelligence is taking all possible measures to support aggressively U.S. Government efforts to ensure the security of nuclear materials and technologies. There are several reasons why U.S. Intelligence is concerned about the security of nuclear materials.

- Russia and the other states of the FSU are not the only potential sources of nuclear weapons or materials. The reported theft of approximately 130 barrels of enriched uranium waste from a storage facility in South Africa, which was covered in the press in August 1994, demonstrates that this problem can begin in any state where there are nuclear materials, reactors, or fuel cycle facilities.
- A few countries whose interests are inimical to the U.S. are attempting to acquire nuclear weapons – Iraq and Iran being two of the greatest concerns. Should one of these countries, or a terrorist group, acquire one or more nuclear weapons, they could enormously complicate U.S. political or military activity, threaten or attack deployed U.S. or allied forces, or even threaten to conduct an attack against the U.S. itself.
- The effort required to become a nuclear power is being reduced. Years ago there were two impediments to would-be proliferators: the technical know-how for building a bomb and the acquisition of the fissile material. While it is by no means easy to make a nuclear weapon, knowledge of weapons design is sufficiently widespread so that a concerted effort could succeed in at least developing a workable, albeit crude, design. The single greatest impediment to a nation acquiring a nuclear capability is the acquisition of fissile material. Nuclear weapons require fissile material in the form of highly enriched uranium or plutonium, both of which require large multi-billion dollar development programs to produce independently. Today, fissile material is more susceptible than ever to being purchased, stolen, or otherwise acquired.

The protection of fissile material in the FSU has thus become more critical at the same time that it has become more difficult. Many of the institutional mechanisms that once curtailed the spread of nuclear materials, technology, and knowledge no longer exist or are present only in a weakened capacity. Effective new methods of control have yet to be fully implemented for a large portion of the world's nuclear related materials, technology, and information.

The list of potential proliferators is not limited to states with nuclear weapons ambitions. There are many non-state actors, such as separatists and terrorist groups, criminal organizations, and individual thieves who could choose to further their cause by using fissile or non-fissile (but radioactive) nuclear materials. Despite press articles claiming numerous instances of nuclear trafficking worldwide, U.S. Intelligence has no evidence that any fissile materials have been acquired by terrorist organizations. There are no indications of state sponsored attempts to arm terrorist organizations with nuclear material, fissile or non-fissile. Furthermore, conventional weapons such as improvised explosives remain the most likely option for terrorist groups because they are much easier to use and can be effective as tools of terror. Unfortunately, this does not

preclude the possibility that a terrorist group could acquire enough nuclear material, potentially through illicit trades, to conduct an operation, especially one specifically designed to incite panic.

A non-state actor does not necessarily need fissile material – which is more difficult to acquire – for its purposes. Depending upon the group's objectives, any radioactive material could suffice, but the use of non-fissile materials would likely result in low levels of contamination with very little physical damage. But non-fissile radioactive materials dispersed by a conventional explosive or even released accidentally could cause damage to property and the environment, and cause social, political, and economic disruption. Examples of non-fissionable, radioactive materials seen in press reports are cesium-137, strontium-90, and cobalt-60. These cannot be used in nuclear weapons but could be used to contaminate water supplies, business centers, government facilities, or transportation networks. Although it is unlikely they would cause significant numbers of casualties, they could cause physical disruption, interruption of economic activity, and psychological trauma to the work force and general populace, and require some measure of post-incident clean-up. Non-state actors already have attempted to use radioactive materials in recent operations. For example:

- In November 1995, a Chechen insurgent leader threatened to turn Moscow into an “eternal desert” with radioactive waste, according to press reports. The Chechens directed a Russian news agency to a small amount of cesium-137 in a shielded container in a Moscow park which the Chechens claimed to have placed there. Government spokesmen told the press that the material was not a threat, and would have to have been dispersed by explosives to be dangerous. According to DoD assessments, there was only a very small quantity of cesium-137 in the container. If it had been dispersed with a bomb, an area of the park could have been contaminated with low levels of radiation. This could have caused disruption to the populace, but would have posed a minimal health hazard for anyone outside the immediate blast area.
- The Japanese cult Aum Shinrikyo, which twice attacked Japanese civilians with deadly sarin nerve agent, also tried to mine its own uranium in Australia and to buy Russian nuclear warheads.

Traditional terrorist groups with established sponsors probably will remain hesitant to use a nuclear weapon, for fear of provoking a worldwide crackdown and alienating their supporters. In contrast, a new breed of multinational terrorists, exemplified by the Islamic extremists involved in the bombing of the World Trade Center in 1993, might be more likely to consider such a weapon if it were available. These groups are part of a loose association of politically committed, mixed nationality militants, apparently motivated by revenge, political grievances, or a general hatred for the West.

3.3 The Terrorist Threat of Chemical and Biological Weapons

The danger that a terrorist organization like the Aum Shinrikyo could acquire the capability to launch an attack using CW or BW continues to exist. U.S. Intelligence continues to assess and analyze the threat of a terrorist CW or BW attack, a threat that remains ever present. The Aum

Shinrikyo attacks in June 1994, in Matsumoto, Japan, which killed seven and injured 500, and on the Tokyo subway in March 1995, which killed 12 and injured 5,500, were the first instances of large-scale terrorist use of CW agents, but a variety of incidents and reports over the last two years indicate continuing terrorist interest in these weapons. These incidents include, but are not limited to:

- In February 1996, German police confiscated from a Neo-Nazi group a coded diskette that contained information on how to produce the CW agent mustard gas. German police have stated that there are no indications yet of intent or effort to manufacture the agent.
- Tajik opposition members laced champagne with cyanide at a New Year's celebration in January 1995, killing six Russian soldiers and the wife of another, and sickening other revelers.
- Press reports indicate that the Kurdistan Worker's Party (a guerrilla group that opposes Turkish rule of historically Kurdish regions) poisoned water supplies in southeast Turkey with cyanide.

Terrorist interest in CW and BW is not surprising, given the relative ease with which some of these weapons can be produced in simple laboratories, the large number of casualties they can cause, and the residual disruption of infrastructure they can precipitate. Although popular fiction and national attention have focused on terrorist use of nuclear weapons, CW and BW are more likely choices for such groups.

- In contrast to the fabrication of nuclear weapons, the production of BW requires only a small quantity of equipment.
- Even very small amounts of BW and CW can cause massive casualties. The fact that only 12 Japanese died in the Tokyo subway attack has tended to mask the significance of the 5,500 people who were treated or examined at medical facilities. Such a massive influx of injured – many critically – has the potential to overwhelm emergency medical facilities, even in a large metropolitan area.
- Terrorist use of these weapons also makes them “weapons of mass destruction” because of the necessity to decontaminate affected areas before the public will be able to begin feeling safe again.

Although the Aum Shinrikyo case demonstrates that terrorists can produce CW, they also may be able to directly acquire these weapons via other means, including: theft of agents from research labs, acquisition of commercially available poisons, theft of CW munitions held by the military, black market activity, and receipt of ready-made CW agents or munitions from a state sponsor. It is unlikely that all such acquisition attempts will be discovered and investigated. Detection of the acquisition of BW is especially troublesome. There is no doubt that the use of BW could be devastating, possibly causing thousands of deaths, and, at the very least, seriously

disrupt the daily lives and business activities of Americans and U.S. allies. Consequently, BW agents represent a serious threat to U.S. national security.

The continued existence of states such as Iran, Libya, and Syria, which remain on the State Department's terrorist list, highlights the danger of potential state sponsorship of a terrorist's CW or BW program, although there is no evidence of state sponsors providing CW or BW or the technologies to produce them to terrorist groups.

The Aum Shinrikyo. The investigation of Aum leader Shoko Asahara has resulted in a number of revelations about the cult's activities. Press reports allege that:

- Asahara ordered the capability to produce sarin beginning in 1993; a large agent production complex was not operational until March 1994.
- Some evidence suggests that the group may have tested sarin on sheep in Australia. Press reports claim that examination of some 30 sheep carcasses at an abandoned Aum site in Australia revealed the presence of sarin and other pesticides of similar structure.
- After the breakup of the Soviet Union, Aum expanded its activities in Russia, claiming some 30,000 followers there in addition to the 10,000 in Japan.
- Aum's Russian element broadcasts religious radio programs into Japan from the Russian Far East.
- Video news footage indicates that a Russian-made GSP-11 toxic gas detector was found at the Aum compound in Japan. Designed to be used on the battlefield, the Russian detector can also be used in a nerve agent production and handling facility.
- Asahara intended the simultaneous chemical strike on 10 locations in the Tokyo subway to be a massive mystery attack that would divert attention from the cult.
- In February 1996, the Thai police were informed by the Japanese embassy that members of Aum Shinrikyo had arrived in Thailand possibly to carry out terrorist activities. One individual was arrested and later identified as an Aum member; however, there is no information indicating that terrorist activity was planned or conducted in Thailand.

3.4 The Military Threat of Chemical and Biological Weapons

The military threat from CW/BW is greater today than it has ever been – particularly in regions where religious, ethnic, and/or economic strife are feeding the roots of conflict. Exacerbating the problem is the worldwide proliferation of knowledge and technology related to CW/BW and weapon development. Ready access to international computer networks and databases provides a would-be proliferant with unparalleled access to information that can greatly accelerate the development of a CW/BW weaponization program (i.e., turning a stockpile of CW/BW agents into a militarily significant weapon). Not only must U.S. forces be prepared for these threats; they must be prepared now.

The costs of nuclear weapons, the requirement for large supporting infrastructures, and the need to acquire the many different technologies necessary for weaponization are limiting factors in achieving a nuclear weapons capability. On the other hand, initiating a CW agent production capability is a rather straightforward adaptation of basic industrial chemical processes. Similarly, BW agents can be produced by countries possessing a pharmaceutical, veterinary, or medical infrastructure. For such countries, CW and BW production is technically feasible and can become a reality with the acquisition of some specialized equipment, cooperation of appropriate scientists and engineers, and the political will to do so. The military effectiveness of CW/BW weaponization will depend on the overall support available from the country's military infrastructure and the training and doctrine development it can provide. However, with only modest investments a credible and effective CW/BW weaponization program can be established.

Aimed at certain critical nodes in the military infrastructure of the U.S., either domestically or abroad, CW and BW could seriously disrupt the execution and tempo of military operations. Contamination of mobilization/logistics nodes, ports, and other choke points created during force projection (e.g., the ports at Al Jubayl and Ad Dammam during the Gulf War) could delay the initiation of military campaigns, increase the exposure and vulnerability of troops, and threaten the very success of military operations. It is imperative, therefore, that U.S. forces be prepared to operate effectively in CW/BW contaminated environments while simultaneously being able to detect and identify threat agents, treat casualties, and remediate contaminated areas.

The Soviet Union may have had the most advanced CW and BW programs in the world; at the very least, it certainly had the largest. The collapse of the Soviet Union and the current economic and unemployment problems of the states of the FSU may have a significant impact in the coming years on the direction and pace of CW and BW development throughout the world. While not sanctioned by the standing governments of FSU states, individuals and organizations may be tempted to sell related knowledge and materiel for hard currency just to survive. Certainly, the scientists and engineers formerly employed in the Soviet CW/BW weapons complex could be vulnerable to this temptation. Just as the level of protection and control of nuclear materials has declined since the fall of the Soviet Union, so too could CW and BW knowledge and material become vulnerable to pilfering by entrepreneurs looking to turn a quick profit in the international proliferation marketplace.

Press reports indicate that the Soviet Union may also have developed CW agents which are harder to detect, protect against, and treat than standard nerve and other conventional CW agents. Proliferation of knowledge and material associated with these CW agents to regions of instability or by rogue nations could severely impact U.S. national interests, national policy, and military strategy. The prospect of facing a country, such as Iraq, equipped not just with CW, but with CW for which we do not possess adequate means of protection or detection is a sobering thought, indeed.

Another, less well understood, CW threat is the potential for a Bhopal-like event resulting from deliberate targeting of industrial facilities in populated areas. U.S. forces operating in industrial areas could face a combined threat of conventional CW agents and exposure to industrial chemicals released either deliberately by saboteurs or as a result of collateral effects associated with military attack operations (i.e., by friend or foe).

Currently there are some 20 countries that possess or are seeking to acquire CW and BW capabilities. Some of these programs are relics from the Cold War, others are the result of current tensions and instabilities, and still others defy any reasonable explanation (at least by Western standards). Whatever the rationale for the existence of these programs, they all have the potential to pose a serious threat to U.S. military forces operating in or near these countries. The importance and gravity of these issues are underscored by noting that the countries which are the greatest concern to the U.S. as potential CW/BW weapons proliferants are also in regions where the U.S. has well defined national security interests (e.g., the Middle East). Therefore, it is of paramount importance that U.S. forces continue to maintain a credible capability to operate effectively in a CW/BW contaminated environment, and that the U.S. continue to play a leadership role in CW and BW arms control efforts to establish enforceable international norms and control mechanisms for these weapons, like those embodied in the Chemical Weapons Convention (CWC) and the Biological Weapons Convention (BWC).

Ballistic Missile NBC Weapon Delivery Systems. Ballistic missiles offer potential proliferators several advantages in delivering NBC weapons. This is evidenced by the fact that many of the states thought to possess or seeking to possess NBC weapons also have programs to develop or acquire ballistic missiles. Ballistic missiles are less expensive to acquire and sustain than a modern air force. They have a relatively low profile infrastructure, and the use of mobile launchers makes them far less vulnerable to U.S. offensive operations than, for example, manned aircraft with ties to fixed air bases. The U.S. experience in the Gulf War demonstrated the exceptional challenge posed by mobile ballistic missile launchers to counterforce operations. Perhaps the greatest attraction of ballistic missiles is the difficulty in defending against them.

The potential for coercion is, perhaps, the long-range ballistic missile's greatest value to proliferators and the greatest challenge for those seeking to restrain them. Beyond their coercive value in threatening distant cities and their ability to distract and tie up military resources seeking to counter them, ballistic missiles – if sufficiently accurate and/or lethal – can pose a direct military threat as well. During the Gulf War, 25 percent of U.S. combat fatalities resulted from a single SCUD missile strike on a makeshift barracks in Dhahran, Saudi Arabia. Whether as a terror weapon against civilian populations or as a means to threaten the rear of U.S. and coalition forces, ballistic missiles can be an effective offensive weapon, even in the midst of U.S. air superiority. This is particularly the case with NBC-armed ballistic missiles. Because of their ability to spread lethal effects over wide areas, arming ballistic missiles with NBC weapons can, to some extent, compensate for a lack of missile accuracy. An inaccurate ballistic missile armed with conventional high explosives can be transformed from a militarily ineffective terror weapon to a militarily significant weapon by adding an NBC warhead. Hence, those who seek to develop or acquire NBC weapons will likely seek to develop or acquire ballistic missiles as well, and sometimes, unfortunately, vice versa.

Cruise Missile NBC Weapon Delivery Systems. Article 2 of the Intermediate Range Nuclear Forces (INF) Treaty provides a useful definition: "A cruise missile is an unmanned, self-propelled vehicle that sustains flight through the use of aerodynamic lift over most of its flight." Cruise missiles may be even less expensive and more accurate than ballistic missiles, and their smaller size may make them an even more elusive target for counterforce operations.

Furthermore, they may also be more difficult to defend against than manned aircraft because of their lower radar cross-section and flight characteristics. Cruise missiles tend to be small, easy to hide, capable of being launched from a variety of mobile launch platforms (air, ground, and sea based) without significant modifications to the missile, relatively hard to detect in flight, and potentially accurate to a few tens of meters (e.g., via the Global Positioning System). Even unsophisticated general aviation aircraft and commercially available remotely piloted vehicles could be turned into an unmanned cruise missile of sorts and configured to accomplish a variety of militarily significant missions. Such aircraft are widely available and inexpensive to purchase, support, and operate. Even though short-range anti-ship cruise missiles are already widely available, there are only a few countries that possess long-range, land-attack cruise missiles. However, there are no technological barriers preventing even developing nations from developing or purchasing these relatively inexpensive, potentially very accurate NBC weapon delivery systems. Although they can be designed to deliver their payloads to great distances (both the U.S. and the FSU built cruise missiles with range capabilities of more than 3,000 km), the majority of currently available cruise-type missiles have ranges typically less than about 500 km.

Underground and Hardened NBC/M Facilities. Some countries are concealing NBC/M facilities and protecting them from attack by constructing underground and other hardened facilities. Placing an NBC/M capability – a weapon, a delivery system, or an NBC weapon production complex – within an underground facility enhances a country's ability to conceal the facility's location, in addition to providing considerable protection against attack. Outer perimeter protection in such facilities may involve concrete and steel roofs with earth cover. Other options include the use of tunnels, including existing coal and salt mine complexes and natural caves that can be both deep and extensive. Within a hardened complex such measures as blast doors, barriers, turns in tunnels, and expansion chambers can channel and deflect blast waves to mitigate their destructive effects. Modern excavating equipment has speeded the process of constructing such facilities while also reducing construction costs.

The Iraqi shallow buried and hardened facilities attacked during the Gulf War were for the most part remnants of an earlier generation of protective facilities construction. Because of the success achieved by U.S. weapons against these facilities, a new trend has been observed: the increased use of deep underground structures, such as abandoned mines or tunnels, to protect high value military assets. A proliferant state's NBC/M forces and supporting infrastructure elements are one such high value military asset. Libya's construction of the Tarhunah tunnel complex, a suspected large scale CW production facility, is an example of this trend recently reported in the press. This complex is illustrated in Figure 3.2.

3.5 Iraq: A Country Study

This country study examines the magnitude of Iraq's CW and BW programs and underscores the complexity faced by international efforts to curb the spread of these weapons. Details about the breadth of Iraq's past CW and BW programs are presented to demonstrate the broad range of weapons that a state sponsor of terrorism has available and could provide to terrorists if it so chooses.

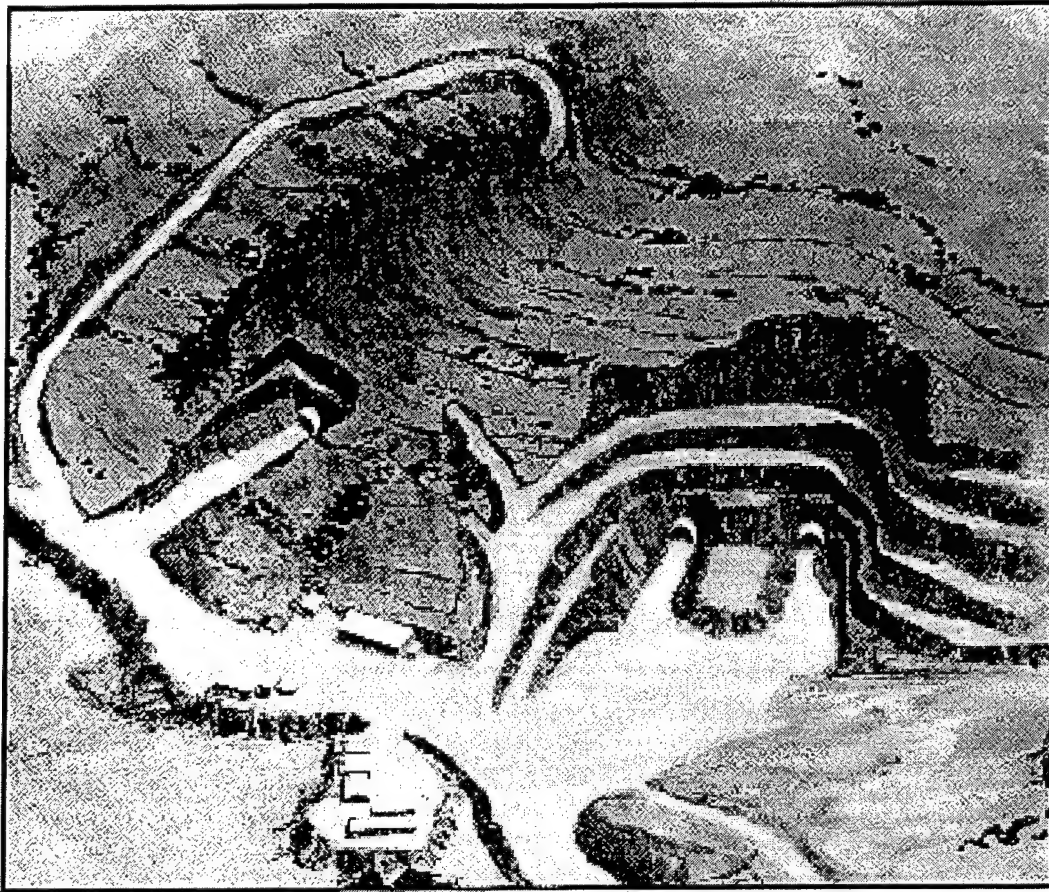


Figure 3.2 The Tarhunah Underground CW Production Complex

The unprecedented inspections conducted in Iraq by the United Nations (UN) have revealed much about Iraqi NBC/M programs. In the wake of the August 1995 defection of two high-level Iraqis, the Baghdad government turned over to the United Nations Special Commission (UNSCOM) and the International Atomic Energy Agency (IAEA) a large cache of NBC/M-related documents and have revealed even more information in extensive discussions with both UN organizations. The sudden revelation of new information underscored the long-standing judgment that the Iraqis had made efforts to deceive UNSCOM and the IAEA. Such behavior resulted in UNSCOM Chairman Ekeus's delivery of a strongly worded report to the UN Security Council that was critical of Iraq's progress in fulfilling its obligations under the UN resolutions imposed following the Gulf War. Despite severe war damage and over four years of UN inspections, Iraq retains some infrastructure to resurrect many of its NBC/M programs.

Iraq's Biological Warfare Program. Following the August 1995 defections of high level Iraqi officials, Iraq revealed substantial additional information about its extensive BW program. The Iraqi Government adopted a policy to acquire additional BW in 1974. R&D began in 1975, but went into hiatus in 1978. In 1985, Iraq restarted BW R&D. Initial work focused on literature studies, until bacterial strains were received from overseas in April 1986. Additionally, Iraq's

revelations to the UN included the following information on the production and weaponization of its BW agents:

- A total of 6,000 liters of concentrated botulinum toxin and 8,425 liters of anthrax were produced at Al Hakam during 1990. An additional 5,400 liters of concentrated botulinum toxin were produced at the Daura Foot and Mouth Disease Institute during the period of November 1990 to January 15, 1991; 400 liters of concentrated botulinum toxin was produced at Taji; and 150 liters of concentrated anthrax were produced at Salman Pak.
- Production of clostridium perfringens (a biological agent that causes gas gangrene and, when aerosolized, can cause severe gastric effects) began in August 1990. A total of 340 liters of concentrated agent was produced.
- Static field trials of anthrax simulant and botulinum toxin were conducted using aerial bombs as early as March 1988. Effects were observed on test animals. Additional weaponization tests took place in November 1989 with 122 mm rockets. Live firings of 122 mm rockets filled with agents were conducted in May 1990.
- Large-scale weaponization of BW agents began in 1990. Iraq filled more than 150 bombs and 25 missile warheads with agent. Some of the bombs were dispersed to military airfields.
- Iraq worked to adapt a modified aircraft drop tank for BW agent spray operations beginning in December 1990. The tank could be attached either to a piloted fighter or to an unmanned aircraft that would be guided to the target by a piloted aircraft. The tank was designed to spray up to 2,000 liters of anthrax on a target. Iraq claims the test was a failure, but three additional drop tanks were modified and stored, ready for use.

Iraq's Chemical Warfare Program. These revelations further demonstrated the ability of a determined proliferator to hide some information about its CW/BW programs even when subjected to systematic and continued scrutiny and included:

- The Iraqi program to develop the nerve agent VX actually began as early as May 1985 and continued until December 1990 without interruption; Iraq claimed previously that its program spanned only the period April 1987 to September 1988.
- Iraq produced 65 tons of chlorine, intended for the production of VX, and had more than 200 tons each of the precursor chemicals phosphorous pentasulfide and diisopropylamine. Together, these three precursors would have been sufficient to produce almost 500 tons of VX.
- Iraq developed a true binary sarin-filled artillery shell, 122 mm rockets, and aerial bombs in quantities beyond prototype level. An Al Husayn missile with a chemical warhead was flight-tested in April 1990.

Iraq received significant assistance from outside suppliers. Figure 3.3 shows some of the CW munitions (unfueled and defused LD-250 chemical bombs) recovered by UNSCOM inspectors after Desert Storm.

Response to the Threat. Additional information on the NBC/M proliferation and NBC terrorist threats may be found in the Intelligence Annex to this report. DoD, DOE, and U.S. Intelligence policy and strategy objectives which provide a framework in which to deal with NBC/M proliferation and NBC terrorism threats are summarized in the next Section. DoD's military response to counter NBC/M threats is discussed in Section 5. DOE's programs in proliferation prevention are described in Section 6, and U.S. Intelligence's response to countering proliferation is summarized in Section 7. The integrated DoD, DOE, and U.S. Intelligence, response to countering paramilitary and terrorist NBC threats is discussed in Section 8. Details of U.S. Intelligence's response, including new initiatives, activities, and programs which address shortfalls in efforts to counter proliferation, may be found in the Intelligence Annex.

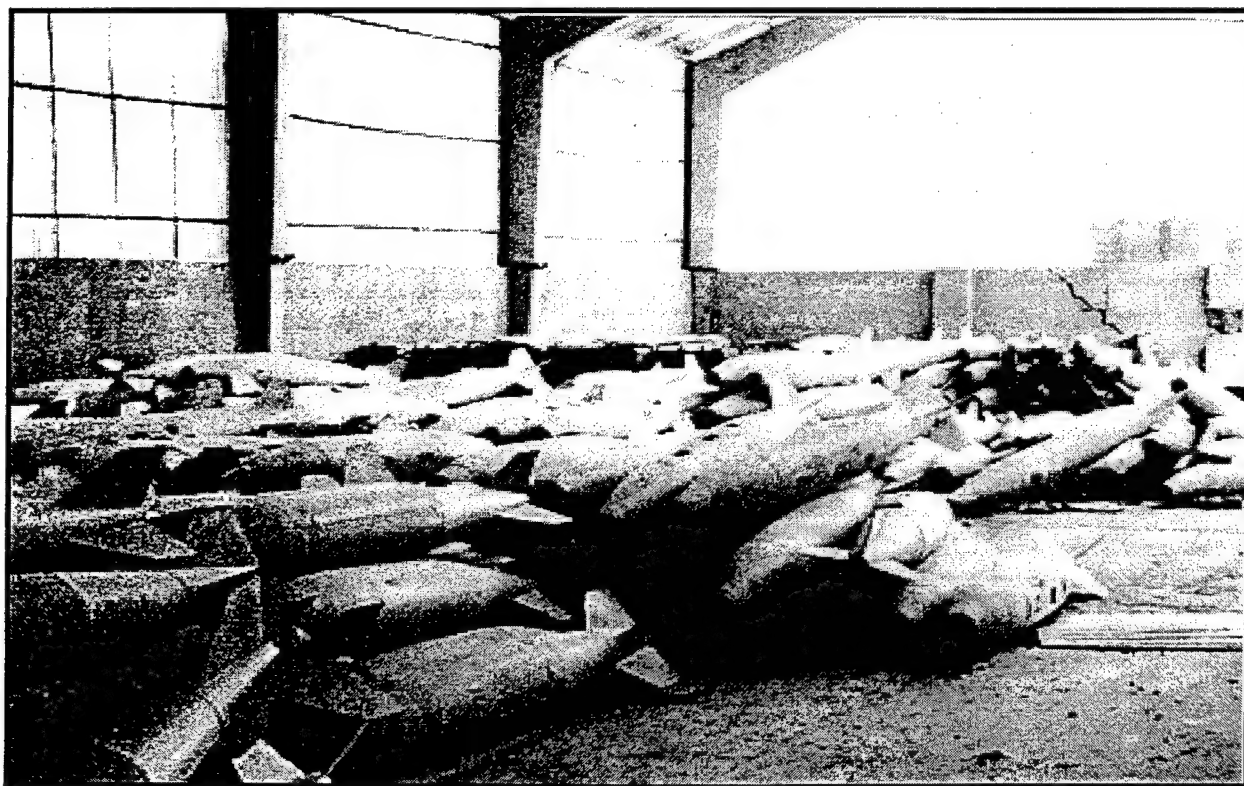


Figure 3.3 Iraqi CW Munitions Recovered after Desert Storm

4. Policy and Strategy Perspectives for Countering Proliferation and NBC Terrorism

National policy objectives related to countering NBC/M proliferation and NBC terrorism threats are discussed in this section along with the policy and strategy perspectives of DoD, DOE, and U.S. Intelligence. Summaries of the roles and missions of interagency organizations responding to the counterproliferation challenge are also provided.

"The objective is to reduce the threat of nuclear war to the world in the future, and to reduce the threat of other weapons of mass destruction. There still is no more significant obligation I have to future generations . . ." (April 4, 1995)

— William J. Clinton, President of the United States

Early in his administration, President Clinton issued guidance defining national nonproliferation policy objectives in Presidential Decision Directive-13 (PDD-13). This guidance has been effective in shaping a coherent and unified plan of action for DoD, DOE, and U.S. Intelligence to work together in an interorganizational effort to counter both the proliferation of NBC/M and NBC terrorism. Figure 4.1 serves to summarize the key documents that define U.S. policy for countering NBC/M proliferation and NBC terrorism, along with those that establish the policy and strategy objectives of the CPRC-represented organizations in furtherance of U.S. national policy.

4.1 National Perspectives

NBC weapons and their associated delivery systems, pose a major threat to the national security of the United States and that of our allies and other friendly nations. Thus, a key component of U.S. national strategy is to seek to stem the proliferation of such weapons and develop an effective capability to counter these threats when proliferation occurs. The U.S. is continuing to improve its capabilities to deter, defend against, and prevent the use of NBC weapons and protect against their effects should they be used. As an integral part of U.S. strategy to counter proliferation, the U.S. will continue to: i) maintain robust military capabilities, including nuclear forces, to deter NBC/M use; ii) comply with existing arms control agreements; and iii) support new arms control treaties, agreements, and regimes associated with restricting NBC/M.

Through a wide array of arms control and denuclearization treaties and initiatives, the U.S. has achieved considerable success in stemming the proliferation of NBC/M. The Nunn-Lugar Cooperative Threat Reduction program, the Nuclear Non-Proliferation Treaty, the Comprehensive Test Ban Treaty (CTBT), the Missile Technology Control Regime, the Chemical Weapons Convention, and the Biological Weapons Convention have all contributed to slowing, and in some

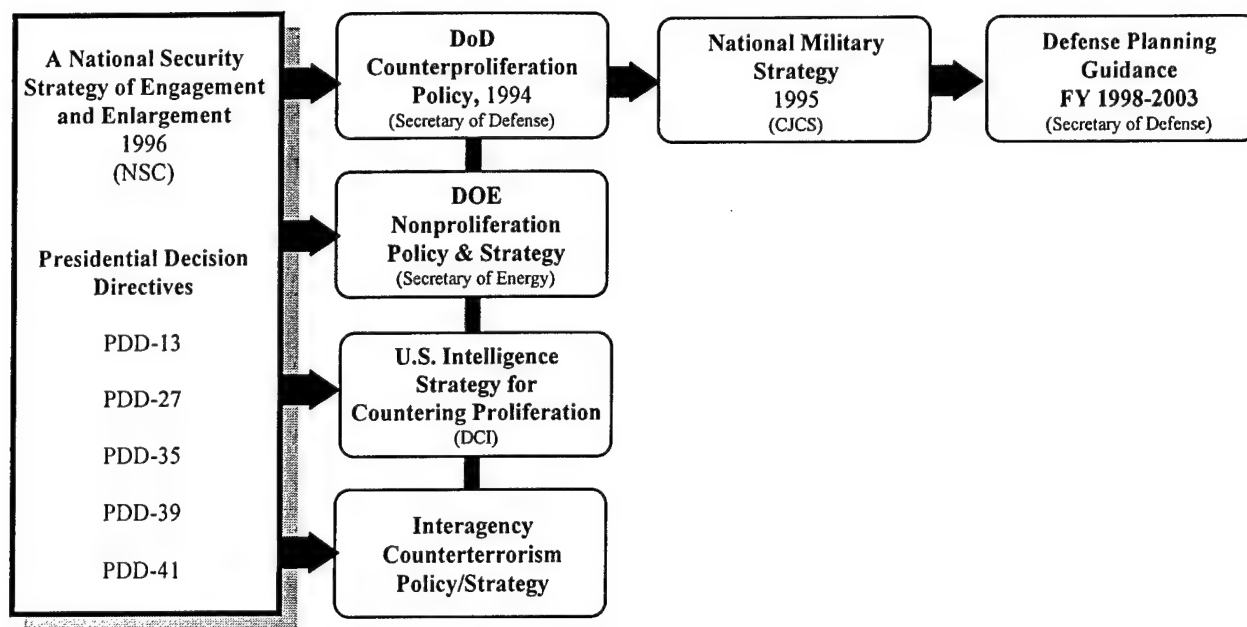


Figure 4.1 Key Documents Defining Policy and Strategy Objectives for Countering Proliferation and NBC Terrorism

cases, rolling back NBC/M proliferation. The vigorous pursuit of these policies has raised the price of access to, and reduced the demand for, NBC/M. The U.S. is attempting to devalue NBC/M by providing regional security strategies, providing incentives for acquisition abstinence, fielding defensive capabilities to render these weapons militarily ineffective, and taking steps to ensure a credible risk of economic and military responses if proliferation occurs or if NBC weapons are used.

The U.S. also seeks to prevent additional countries from acquiring NBC/M and will use the full range of its capabilities to detect and prevent such activities. However, should such efforts fail, U.S. military forces will be prepared to operate effectively in NBC contaminated environments. This requires improved defensive and offensive conventional military capabilities. To minimize the vulnerability of U.S. forces to NBC/M, the U.S. is placing a high priority on improving its ability to locate, identify, and disable arsenals of NBC weapons, their delivery systems, their production and storage facilities, and other supporting infrastructure elements. The U.S. is vigorously pursuing theater and national missile defense development programs designed to be effective in protecting the U.S. homeland and its deployed forces against incoming ballistic missiles. The U.S. is also committed to improving passive defenses to protect its forces, including improved NBC agent detection and early warning systems, individual and collective protection ensembles, medical response and treatment capabilities, and decontamination capabilities. Most importantly, the U.S. will retain the capacity to respond effectively to those who might contemplate the use of NBC/M so that the costs of such use will be seen as outweighing any perceived gains.

4.2 DoD Perspectives

DoD is actively contributing to overall U.S. efforts to stem NBC/M proliferation and maintain the credibility of U.S. security commitments to friends and allies, including those threatened by adversaries armed with NBC/M. The U.S. national goal is to prevent proliferation, but, recognizing that such efforts have not always been successful and that some level of proliferation is likely to continue, NBC/M will remain a military threat. DoD counterproliferation policy supports intensified U.S. efforts to prevent proliferation and ensure the operational effectiveness of U.S. forces to protect national interests and those of our allies against NBC/M threats. It underlies the development of requisite U.S. military capabilities and requires that U.S. forces be prepared to execute offensive and defensive military operations to counter the deployment and employment of NBC weapons.

"I believe the proliferation of weapons of mass destruction presents the greatest threat that the world has ever known . . . perhaps the greatest threat that any of us will face in the coming years." (Confirmation Hearings, January 1997)

"The proliferation of weapons of mass destruction and the ballistic missiles that deliver them pose a major threat and must remain a major focus of U.S. defense policy and budget allocations." (February 1997)

— William S. Cohen, Secretary of Defense

DoD has made significant progress in adjusting to the challenges presented by the proliferation of NBC/M. Responding to the policy objectives set by President Clinton in 1993, DoD launched its Counterproliferation Initiative. As part of this initiative, the Secretary of Defense directed the JCS, the CINCs, the Military Departments, and the Services to give greater consideration to addressing the threats posed by NBC/M in their doctrine, planning, and training and exercise activities. While prevention of NBC/M proliferation and roll back of existing NBC/M programs remain the preeminent goal of U.S. policy, the principal objective of DoD's Counterproliferation Initiative is adapting U.S. military forces to operate effectively in the face of NBC/M. The counterproliferation mission requires a broad range of military capabilities, including effective strategic and tactical intelligence; battlefield surveillance; counterforce; active defense; passive defense; and defense against paramilitary, covert delivery, and terrorist threats.

Counterproliferation requirements and capabilities are now routinely addressed in the Department's planning and programming processes, including prominent emphasis in the Defense Planning Guidance. Military planning, training, and exercises have begun to give more emphasis to NBC/M threats. In today's world, counterproliferation considerations have ramifications for virtually every aspect of U.S. national defense. Therefore, they are being embedded in day-to-day military operations.

One of the core objectives of counterproliferation policy is to convince potential and actual proliferants that NBC weapons will be of limited value by ensuring that U.S. forces and its

coalition partners have the capability to limit or deny the political and military utility of these weapons. Furthermore, U.S. forces will retain the capacity to ensure that the damage inflicted by the U.S. military response to NBC weapons use will definitively neutralize any perceived benefits. U.S. forces also maintain and are strengthening their defensive capabilities against such weapons and are prepared to operate effectively in environments marked by nuclear, biological, or chemical contamination.

“Indeed, the proliferation of WMD – nuclear, chemical, and biological – is one of the most troubling dangers we face.” (1995)

— General John Shalikashvili, Chairman, Joint Chiefs of Staff

4.3 DOE Perspectives

DOE actively contributes to national efforts to stem NBC/M proliferation by pursuing several initiatives, focusing primarily on nuclear proliferation prevention. These include limiting weapons-usable fissile materials worldwide, strengthening the Nuclear Nonproliferation Regime, controlling nuclear exports, establishing transparent and irreversible nuclear reductions worldwide, and securing nuclear materials in states of the FSU.

DOE is attempting to limit the amount of available weapons-usable fissile material by promoting alternatives to the civilian use of plutonium, eliminating the civilian use of highly enriched uranium (HEU), initiating regional fissile material control activities, and assisting in the shutdown of Russian plutonium production reactors. Full scale work on the development of advanced high density, low enriched uranium fuel for research reactor conversion is ongoing. DOE is also encouraging the conversion of additional HEU-fueled reactors to enable the utilization of low enriched uranium fuel.

Strengthening the Nuclear Nonproliferation Regime is a key DOE nonproliferation initiative. DOE is working to increase the effectiveness and efficiency of the International Atomic Energy Agency (IAEA), facilitating IAEA inspections of excess fissile materials, preparing for implementation of the CTBT, and promoting regional nonproliferation measures. DOE is providing direct technical assistance to improve the safeguards effectiveness and efficiency of IAEA inspections in North Korea and Iraq.

DOE is assisting the international community in effectively controlling exports of nuclear materials and establishing responsible supplier policies, implementing U.S. statutory licensing requirements for nuclear or nuclear-related export controls, fostering transparency through automated information sharing and security initiatives, and enhancing export controls in FSU states. DOE is working with the FSU states, Eastern Europe, and with the United Nations (UN) Special Commission on Iraq to expand training in strategic material identification and prevention of illicit trafficking in nuclear weapon related materials and components. In hand with this initiative is DOE's effort to establish transparent and irreversible nuclear reductions worldwide.

Working with the states of the FSU, DOE is exchanging and confirming data on weapons materials inventories and conducting reciprocal bilateral inspections of nuclear weapons-related materials and components. DOE is committed and determined to fully implement all transparency measures and U.S. rights at all Russian facilities engaged in activities covered under the U.S.-Russian HEU Purchase Agreement.

The joint effort by the U.S. and Russia to secure the nuclear materials of FSU states is an important initiative and high priority of U.S. nonproliferation policy. Working with Russia, states of the FSU, and the Baltic states, DOE is improving and expanding material protection, control and accounting (MPC&A) activities at every facility where weapons-usable nuclear materials are stored or transported. Assisting Russia and the FSU states in establishing strong and enduring national systems of MPC&A is a high national nonproliferation priority.

4.4 U.S. Intelligence Perspectives

U.S. Intelligence actively contributes to national efforts to stem proliferation by supporting policy makers in identifying, stopping, and rolling back NBC/M proliferation where it has occurred. U.S. Intelligence assists in operations to slow proliferation activities and in developing countermeasures against NBC/M threats. Most importantly, it collects information useful in stopping NBC/M programs before they reach fruition or in rolling back existing programs. U.S. Intelligence assists DoD in adapting U.S. military forces and emergency assets to deal with these threats by: identifying capabilities, vulnerabilities, and performance characteristics of NBC/M threats; establishing adversary use doctrine and operational strategy; and providing indications and warning of potential NBC/M use. In supporting efforts to roll back NBC/M proliferation, U.S. Intelligence continuously updates the status of foreign NBC/M programs and identifies NBC/M program incentives, disincentives, and vulnerabilities.

Key U.S. Intelligence initiatives for future improvement in capabilities to counter proliferation include:

- Assisting in the development of innovative tools to influence rolling back existing capabilities and programs or deterring the use of NBC/M;
- Providing insight into the plans, intentions, and motivations of those who seek to develop, buy, sell, or use these weapons;
- Acquiring information needed to counter the operational effectiveness of these weapons or reduce the collateral damage associated with their accidental or intentional use;
- Providing timely and accurate assessments of worldwide efforts to develop, sell, transfer, stockpile, deploy, test, or use NBC/M and destabilizing advanced conventional weapons; and
- Providing information regarding compliance with nonproliferation regimes.

4.5 Counterterrorism Response Perspectives

The potential for terrorist use of NBC weapons is a growing concern to U.S. policy makers. It is U.S. policy to deter, defeat, and respond vigorously to terrorist attacks on U.S. territory, against U.S. citizens and their property, or against U.S. facilities, whether they occur domestically, in international waters or airspace, or on foreign territory. The U.S. regards terrorism as a potential threat to national security as well as a criminal act and will apply all appropriate means to combat it. The acquisition of NBC weapons by terrorist groups, through theft, manufacture, or other means, is unacceptable. There is no higher priority than preventing the acquisition of NBC weapons by terrorist organizations or removing such a capability once acquired. Developing effective means to detect, prevent, defeat, and manage the consequences of NBC weapons use by terrorists is also of the highest priority. Furthermore, the U.S. shall seek to identify groups or states that sponsor or support such terrorist activity, isolate them, and extract a heavy price for their actions. DoD, DOE, and U.S. Intelligence are actively engaged in supporting U.S. counterterrorism policy objectives.

4.6 Interagency Organizations Responding to the Challenge of Countering Proliferation

A key part of U.S. strategy to counter NBC/M proliferation and NBC terrorist threats is the establishment of interagency organizations to address critical policy and strategy objectives. The CPRC concentrates on ensuring that interagency R&D and acquisition activities and programs of DoD, DOE, and U.S. Intelligence meet U.S. policy and strategy objectives for countering NBC/M proliferation and NBC terrorism. Other interagency organizations address complementary aspects of national policy and strategy objectives associated with countering NBC/M proliferation and NBC terrorist threats. Listed below are some of these interagency organizations for which DoD, DOE, and U.S. Intelligence play key roles.

The Nonproliferation and Arms Control Technology Working Group. The President established the NPAC TWG in August 1994, pursuant to a comprehensive review of interagency arms control and nonproliferation R&D coordination. The Arms Control and Disarmament Agency (ACDA), DOE, and DoD were designated as co-chairs, with ACDA serving as Executive Secretary. The NPAC TWG was established to facilitate the coordination of arms control and nonproliferation R&D as well as helping to guard against redundant R&D and technology development programs within and among departments and agencies. As an integral component of the interagency process, the NPAC TWG reports to the relevant NSC policy Interagency Working Groups and, through the Committee for National Security (CNS), to the National Science and Technology Council (NSTC). The chartered NPAC TWG functions include: i) exchange information and coordinate arms control and nonproliferation R&D; ii) advise agencies on R&D priorities; iii) facilitate the conduct of cooperative interagency programs; iv) review R&D programs; v) identify overlaps and gaps; vi) frame interagency issues and differences for decisions by adjudicating bodies; vii) advise policy Interagency Working Groups on R&D capabilities and limitations; and viii) make recommendations, through the CNS, to the NSTC on coordination of all nonproliferation and arms control-related R&D programs in the President's budget. To ensure the comprehensiveness of its activities, the NPAC TWG's formal membership includes 27

departments, agencies, and organizations of the U.S. Government, with more than 87 organizations regularly participating in the NPAC TWG process.

The Technical Support Working Group. The TSWG develops joint integrated counterterrorism R&D requirements across the interagency spectrum. It was established in 1986 in response to a finding by a vice-presidential task force that government-wide R&D activities were uncoordinated and unfocused. The TSWG is the technology development component of the NSC's Interagency Working Group on Counterterrorism, chaired by the Department of State as part of its responsibilities as lead department for combating international terrorism. It is primarily concerned with rapid prototype development of equipment to address critical multi-agency and future threat counter- and anti-terrorism requirements. Its multi-agency membership focuses on six areas of responsibility: conventional incident response, explosive ordnance disposal, chemical and biological incident response, intrusion detection and countermeasures, and surveillance and threat assessment. While its funds are derived principally from the DoD, the Departments of Energy and State and the FBI also contribute directly to project activities. The TSWG develops technologies for a variety of users including: DoD, DOE, U.S. Intelligence, Secret Service, U.S. Marshals Service, Federal Aviation Administration, U.S. Customs Service, and the Centers for Disease Control and Prevention. DoD, under the direction of ASD(SO/LIC), develops technology to meet these interagency requirements through the Counterterror Technical Support (CTTS) program. A significant portion of the TSWG/CTTS technology development efforts are directly related to countering NBC weapon threats.

The Community Nonproliferation Committee. This committee develops and coordinates joint integrated intelligence requirements across the interagency spectrum. The primary vehicles for coordination are biweekly video conferences involving intelligence and policy officials. The policy ramifications of changes in the threat are discussed, usually leading to a focused set of intelligence needs. In most cases, U.S. Intelligence is able to take immediate steps to address these needs.

The MASINT BW Technology Steering Group. In February 1995, the Central Measurement and Signature Intelligence (MASINT) Office (CMO) organized a senior level MASINT BW Technology Steering Group consisting of the Director and Principal Deputy Director of the CMO; the Director of the Nonproliferation Center; ATSD(NCB)'s Deputy for Counterproliferation; ATSD(NCB)'s Deputy for Chemical and Biological Matters; the Deputy Director of the Central Intelligence Agency's (CIA) Office of Research and Development; and the CIA's Director, Clandestine MASINT Operations Group, Office of Technical Collection. New members added in 1997 are the Defense Advanced Research Projects Agency's (DARPA) Defense Science Office and DOE's Office of Nonproliferation and National Security. These organizations represent the majority of elements within the U.S. Government which fund BW defense-related R&D. The steering group is responsible for: i) identifying national BW MASINT needs and requirements within U.S. Intelligence and DoD; ii) identifying technologies and programs currently being developed and/or applied; iii) identifying technology areas and programs outside U.S. Intelligence and DoD that could support national BW MASINT needs; and iv) identifying gaps and overlaps among programs. The group meets quarterly to review areas of common interest. In addition, the group sponsors one BW defense and one CW defense MASINT technology symposium annually. These fora, hosted by the CMO, provide an excellent

opportunity to share technologies and ideas at the scientific level. Substantial cost savings have resulted from the cross-fertilization of ideas and technologies among the various technology group members.

5. DoD Counterproliferation Programs

In the subsections that follow, DoD activities and programs strongly related to counterproliferation are discussed. Section 5.1 is devoted to a discussion of the various activities and key developments affecting DoD's overall Counterproliferation Initiative, including new DoD initiatives, the activities of the Counterproliferation Council, the CINCs' counterproliferation required capabilities and Joint Staff counterproliferation-related activities, a summary of the 1996 DoD Counterproliferation Study, and an update on the current activities of the Counterproliferation Support Program. DoD activity and program descriptions are provided in Sections 5.2 - 5.7 and organized in terms of the counterproliferation functional areas of proliferation prevention, strategic and tactical intelligence, battlefield surveillance, NBC/M counterforce, active defense, and passive defense. This year, DoD programs associated with countering paramilitary and terrorist NBC threats are discussed in Section 8, together with DOE and U.S. Intelligence programs in this area. In Sections 5.2 - 5.7, key program accomplishments and milestones are summarized, and FY 1998 budgetary data is provided. Additional programmatic details are provided in Appendix C. Finally, Section 5.8 summarizes how the accomplishments of DoD activities and programs directly address the counterproliferation ACEs.

5.1 Introduction and New Developments

Policy and Strategy Objectives. U.S. armed forces must be fully prepared to counter the military threats posed by NBC/M. Senior DoD officials continue to take an active role in guiding the implementation of DoD's Counterproliferation Initiative. As a result, the Department is making substantial progress toward fully integrating the counterproliferation mission into its military planning, acquisition, intelligence, and international cooperation activities. These efforts have been built upon the formal policy guidance issued by the Secretary of Defense in May 1994, follow-on guidance contained in internal planning and programming documents, and a DoD Directive on Counterproliferation issued in July 1996. This Directive delineates specific responsibilities, formalizes relationships among DoD organizations, and establishes common terms of reference. These documents reflect DoD's role across the entire spectrum of U.S. Government activities to counter NBC/M proliferation – from supporting diplomatic efforts to preventing and containing proliferation, to protecting the U.S. and its friends and allies and their military forces from NBC weapon attacks.

DoD policy to counter proliferation underlies strengthened efforts to prevent proliferation and to protect U.S. forces, interests, and allies in the face of proliferation where it occurs. It applies to the development of requisite U.S. military capabilities and requires U.S. forces to be prepared to execute offensive and defensive military operations to counter the deployment and employment of NBC/M. The major objectives of DoD policy are:

- Support overall U.S. Government efforts to *prevent* the acquisition of NBC weapons and their associated delivery systems;
- Support overall U.S. Government efforts to *roll back* proliferation where it has occurred;

- **Deter** and **prevent** the effective use of NBC/M against the U.S., its allies, and U.S. and allied forces; and
- **Adapt** U.S. military forces, and their associated planning, doctrine, and training, to operate effectively when confronted with the presence, threatened use, or actual use of NBC/M.

To achieve these counterproliferation policy objectives, U.S. forces must possess a broad spectrum of capabilities. R&D and acquisition programs and other DoD activities designed to bring these capabilities to fruition are described in Sections 5.2 through 5.8 below and in Section 8.

5.1.1 DoD's Counterproliferation Initiative. DoD's Counterproliferation Initiative is the Department-wide effort to meet the challenges posed by the proliferation of NBC/M. It was established to ensure that U.S. forces are prepared to conduct successful military operations in an NBC environment. DoD, through its Counterproliferation Initiative, will invest nearly \$4.9 billion in FY 1998 in programs strongly related to counterproliferation, up more than 14% from the FY 1997 investment of almost \$4.3 billion.

Activities of the CP Council. To ensure that DoD's broad counterproliferation policy objectives are met and that the implementation of the Counterproliferation Initiative is integrated and focused, DoD's Counterproliferation Council (i.e., the "CP Council") was established by the Secretary of Defense in April 1996. The CP Council is chaired by the Deputy Secretary of Defense and composed of the USD(A&T), the Under Secretary of Defense for Policy, the Vice Chairman of the Joint Chiefs of Staff, the Under Secretaries of the Military Departments, the Vice Chiefs of the Military Services, the Assistant Secretary of Defense for International Security Policy (ASD(ISP)), the Assistant Secretary of Defense for Command, Control, Communications, and Intelligence (ASD(C3I)), the ATSD(NCB), and the Director for Strategic Plans and Policy of the Joint Staff. Through the complementary themes of "institutionalizing" and "internationalizing," the CP Council monitors departmental progress in developing the strategy, doctrine, and force planning necessary to execute counterproliferation objectives effectively. It also monitors DoD-wide efforts at training, exercising, and equipping U.S. forces for the counterproliferation mission, as well as overseeing DoD counterproliferation activities in interagency and international fora.

The CP Council meets on a regular basis, focusing on the potential impact of NBC/M proliferation on the Department's ability to fight two nearly simultaneous major regional contingencies, as well as on Joint and individual Service doctrine, training, and exercising for integrated operations in an NBC environment. In this connection, the CP Council identified the importance of understanding the likely NBC employment concepts of proliferants, and took steps to ensure that focused intelligence assessments would be used to develop U.S. regional military plans (as well as doctrine and exercise policies) to counter them. The CP Council will continue to address specific issues within the broad areas of adversary use concepts, counterproliferation doctrine, training and exercising, and related issues.

5.1.2 CINC Counterproliferation Priorities and Planning Activities. DoD's counterproliferation responsibilities include the application of military force, when necessary. Deriving the CINCs' formal warfighting plans follows a deliberate and formalized "national

objective-to-task" process that proceeds from top-level Presidential guidance and instructions down to specific military operational plans and activities. The National Security Strategy, Presidential Decision Directive-13, and the Counterproliferation Policy Guidance of the Secretary of Defense have already provided the framework for counterproliferation planning. Three Joint documents that have evolved from these broad guidance documents are the *Missions and Functions Study*, the *Counterproliferation Charter*, and the CJCS's *Counterproliferation 0400 CONPLAN* (concept plan). These are the key documents that serve as the prerequisites for beginning the CINCs' formal planning process to execute U.S. counterproliferation policy.

Because the challenges of counterproliferation involve new policy considerations, the *Missions and Functions Study* was a special effort chartered by the Secretary of Defense and aimed at facilitating future DoD counterproliferation planning. The study was a combined effort by the Joint Staff, Services, CINC representatives, and OSD. Its key findings were: i) each geographic CINC would be responsible for executing U.S. counterproliferation policy within his area of responsibility (AOR); and ii) implementation of counterproliferation policy within each AOR would be executed via each CINC's standard deliberate planning process. This planning process included the development of the overarching CJCS's *Counterproliferation 0400 CONPLAN*, prior to each CINC developing an AOR-specific counterproliferation CONPLAN.

The findings of the *Missions and Functions Study* were approved by the Secretary of Defense in May 1995, and he further directed that a *Counterproliferation Charter* be written prior to the development of the CJCS's *Counterproliferation 0400 CONPLAN*. The *Counterproliferation Charter* was developed as a supplement to the top-level guidance documents delineated above, providing more of a military focus with respect to the counterproliferation mission. The *Counterproliferation Charter* has been approved by the CJCS and the Secretary of Defense. The CJCS's *Counterproliferation 0400 CONPLAN* further defines national level counterproliferation policy and guidance in terms of three national counterproliferation operational objectives and six counterproliferation operational tasks. These national counterproliferation operational objectives and tasks evolved from an in-depth analysis of the intentions of multiple top-level U.S. policy documents relevant to the counterproliferation mission. The ensuing objectives and tasks have been fully coordinated throughout the Commands and within OSD. These counterproliferation operational objectives and tasks will guide the CINCs through the development of their AOR-specific CONPLANS. The CJCS's *Counterproliferation 0400 CONPLAN* was coordinated in the Joint Staff and was then given to the CINCs so that they could initiate their own AOR-specific counterproliferation planning. The reader is referred to the *Counterproliferation 0400 CONPLAN* for additional details.

The CINCs' Counterproliferation Required Capabilities. The current CINCs' listing of 16 counterproliferation required capabilities, considered necessary to conduct the counterproliferation mission from a military warfighting perspective, was developed by the Joint Staff's Deterrence/Counterproliferation JWCA team, approved by the Joint Requirements Oversight Council (JROC), and endorsed by the CINCs in 1996. The prioritized list evolved from a series of Operational Planning Workshops (OPWs) with each of the CINCs. The workshops reviewed national objectives which support the U.S. national goal of countering proliferation. Deterrence/Counterproliferation operational tasks and required military capabilities were identified, validated, and prioritized from the CINC perspective of supporting the CJCS's

Counterproliferation 0400 CONPLAN. The CINCs generally put the highest priority on those areas where the most leverage could be exercised for getting enhanced capabilities out to the field quickly. Table 5.1 lists the CINCs' required counterproliferation capabilities. It also illustrates the evolution of the current required capabilities from the CINCs' original counterproliferation priorities established by the Deterrence/Counterproliferation JWCA and approved by the JROC in 1994 (and reaffirmed annually). This evolution reflects the CINCs' need for improved capabilities and technologies to support timely counterproliferation-related intelligence, conventional counterforce response with minimal collateral effects, and the activities of SOF in countering paramilitary and terrorist threats. The CINCs' counterproliferation required capabilities were reviewed by the CPRC and served as a basis for the review and revision of the counterproliferation ACEs. In general, the top priority ACEs track the top priority CINC-required counterproliferation capabilities. There are, however, some differences owing to the broader perspective of the interdepartmental CPRC and because the CPRC ACEs focus on capability *shortfalls* whereas the CINCs focus on capability *requirements*. This comparison is also summarized in Table 5.1.

Table 5.1: Evolving CINC Counterproliferation Priorities and Required Capabilities

1996 CINC Counterproliferation Priorities		1997 CINC Counterproliferation Required Capabilities	Corres. ACE*
1. Detection and characterization of BW and CW agents	CINC OPWs	1. CP intelligence cycle	8
2. Intercept cruise missiles		2. Conventional response with minimal collateral effects	2, 3
3. Defeat underground targets		3. SOF response and intelligence collection/analysis targeting covert/paramilitary/terrorist threats	5, 6
4. Characterization and identification of underground targets		4. Battlefield NBC detection and warning	1
5. Collect and analyze intelligence		5. Theater missile defense with minimum collateral effects	4
6. Passive defense enabling operations		6. Defeat underground targets	3
7. Support for operations in an NBC environment		7. Target planning/analysis including collateral effects prediction and post-strike assessment	11
8. Production of BW agent vaccines		8. Individual protection	9
9. Planning and targeting for above ground infrastructure		9. Proliferation pathway analysis	13
10. BW/CW agent defeat		10. Cruise missile and aircraft defense with minimum collateral effects	7
11. Detection and tracking of shipments		11. Collective protection	9
12. Prompt mobile target kill		12. Mobile target defeat	12
13. Support for Special Operations Forces		13. Offensive information warfare	-
14. Locate, detect, and disarm WMD in CONUS and OCONUS		14. CP consequences logistics capability	9
		15. Decontamination	9
		16. NBC medical treatments	9, 10

* DoD ACE Prioritization

5.1.3 Key Counterproliferation Studies and Analyses. Two studies, completed in 1996 and addressing military operations in NBC contaminated environments, are having a significant impact on counterproliferation planning. They are described in this subsection.

The 1996 DoD Counterproliferation Study. Last year, during the FY 1997 - 2001 DoD budget review, a detailed assessment of all counterproliferation-related programs was conducted. The assessment addressed programmatic alternatives and priorities, policy impacts, CINC requirements, and management alternatives. The goal of the Counterproliferation Study was to provide senior DoD leadership with quantitative estimates of returns on counterproliferation investments over the FY 1998 - 2003 Future Years Defense Plan (FYDP) in support of this assessment. The study was conducted under the auspices of OSD's Director for Program Analysis and Evaluation (PA&E), with participation by ATSD(NCB)'s Deputy for Counterproliferation (DATSD(NCB)(CP)), ASD(SO/LIC), ASD(ISP), ASD(Strategy and Requirements), the Services, Joint Staff, Ballistic Missile Defense Organization (BMDO), Defense Special Weapons Agency (DSWA), and Defense Intelligence Agency (DIA). It was completed in the summer of 1996.

The study reviewed R&D and acquisition programs strongly related to counterproliferation to identify applicable U.S. capabilities and technologies and employed validated NBC/M threats and conflict scenarios. These building blocks, together with the CINCs' updated counterproliferation required capabilities, led to the formulation of programmatic alternatives. To meet study time lines, the study did not employ full-scale military campaign models, but, instead, employed simpler models, results from previous authoritative studies, reasonable interpolations and extrapolations of their results, and expert judgment to perform first order cost-benefit analyses of NBC passive defense programs. Synergies between NBC passive defense, ballistic missile active defense, and NBC/M counterforce operations were also identified. Three scenarios involving NBC/M were addressed: i) a Major Regional Contingency in North-East Asia; ii) conventional counterforce operations against a rogue nation's NBC/M infrastructure; and iii) terrorist attacks using CW/BW, with and without prior warning.

Major Regional Contingency. This scenario, an extrapolation of BMDO's "Capstone" Cost and Operational Effectiveness Assessment (COEA), involves an intense conflict initiated by the Democratic People's Republic of (North) Korea (DPRK) against the Republic of (South) Korea (ROK) and its U.S. allies. Four tractable NBC/M-related "vignettes" were defined to capture the essential features of the conflict and illuminate counterproliferation-related programmatic options. One vignette deals with the capability of U.S. ground forces to prevail against CW-armed rocket and standoff BW attacks. Two other vignettes focus on U.S. capabilities to sustain air base and seaport operations in the face of CW-armed theater ballistic missile attacks and BW attacks by covert DPRK infiltrators. The fourth vignette addresses collateral effects on civilians arising from DPRK NBC attacks on nearby ROK military targets.

The interplay among active defense, counterforce operations, and passive defense strongly influences achievable air base sortie rates and the operational status of port facilities. Early in the conflict, an effective active defense helps establish air superiority by reducing the ballistic missile delivered CW threat to air bases, thereby enabling high sustained sortie rates. Air superiority is a key prerequisite for successful counterforce operations against mobile rocket and missile

launchers, and attrition of these launchers further reduces CW threats to both air bases and port facilities. This attrition also places less stress on stocks of passive defense materiel for individual and collective protection, decontamination, and medical treatment. The synergistic roles of active defense, counterforce operations, and passive defense in “thinning the threat” is depicted in Figure 5.1. Timely detection and early warning of CW/BW agents greatly reduces U.S. casualties by allowing military personnel to quickly don individual protective gear. Modern NBC protective equipment greatly improves the effectiveness of U.S. forces and their ability to sustain high aircraft sortie rates. To maintain nominal port operations, passive defense measures must also be available to those essential civilian workers primarily responsible for unloading and transporting cargo. Moreover, it must be noted that NBC attacks, particularly BW attacks, could have devastating collateral effects on nearby population centers, and that, consequently, the host nation (possibly assisted by the U.S.), should plan for timely detection, early warning, and protection measures for its civilian population.

U.S. Strike Against a Rogue Nation's NBC/M Infrastructure. The capability to destroy or disrupt an adversary's NBC/M infrastructure – and to do so with minimal collateral effects – is a top priority of the CINCs. NBC/M infrastructure targets in five rogue nations, organized by function (nuclear, biological, or chemical production or storage facilities) and hardness (aboveground soft or hard, shallow underground, deeply buried, and tunneled), were reviewed by a DSWA-convened panel of weapon and weapons effects experts to evaluate current and projected counterforce capabilities against these targets. They concluded that current capabilities to hold NBC/M infrastructure targets at risk significantly limit CINC counterforce options. In particular,

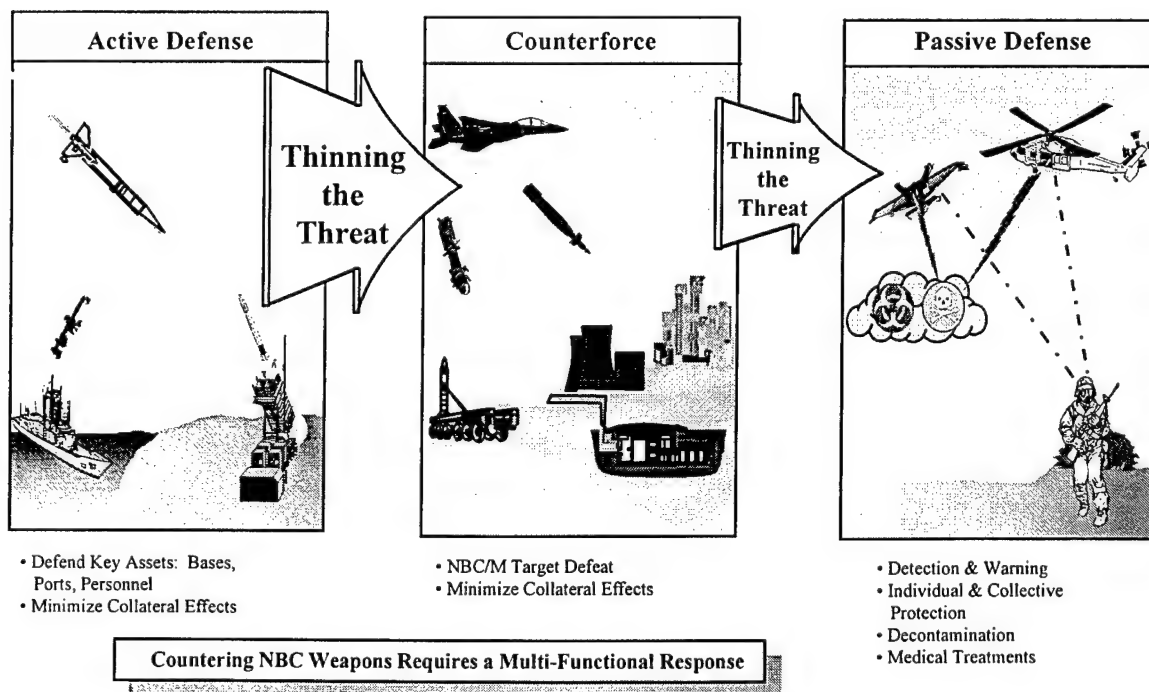


Figure 5.1 Interrelated Roles of Active Defense, Counterforce, and Passive Defense: Thinning the Threat

the more hardened targets could not be defeated reliably, and collateral effects could not be predicted or controlled with confidence. The ongoing and follow-on Counterproliferation ACTDs are addressing these shortfalls and will significantly expand CINC counterforce options. However, shortfalls will remain in placing deeply buried and tunneled targets at risk.

Terrorist CW/BW Attack. Two scenarios were evaluated: i) a surprise CW/BW attack on a U.S. asset amidst a population indigenous to the terrorists, and ii) a BW attack announced in advance during a civil event within a population foreign to the terrorists. In the surprise attack, terrorists targeted an air base supporting U.S. military activities in a foreign country with a sufficient quantity of CW or BW agents to provide a lethal dose to base personnel while minimizing the risk of exposure to the surrounding population. CW/BW agent detectors could be used to direct appropriate and timely medical treatment, and improved collective protection, such as better building filtration, would reduce casualties for personnel remaining indoors. In the scenario with prior warning, the terrorists, equipped with BW dispensers each containing a few kilograms of anthrax, take up multiple positions around a major European city in order to threaten as many people as possible. Their dispersed posture makes counterterrorism actions difficult. It was estimated that U.S. SOF troops at current readiness levels could simultaneously neutralize several of the BW dispensers and/or bands of terrorists with high confidence, provided their locations were known or could be found quickly.

General Conclusions of the Study. DoD's investments in passive defense have direct and positive impacts on the effectiveness of ground forces in CW and BW contaminated environments. Additionally, if both active defense and counterforce operations are highly effective, air base and port facility operations are sustainable; however, civilian port workers must be supplied with some measure of CW/BW attack warning and individual protection. The Counterproliferation ACTDs will provide the CINCs with more options for defeating fixed NBC/M infrastructure targets while minimizing collateral effects. A remaining, long-term shortfall is still projected in U.S. capabilities to defeat deeply buried and tunneled targets. CW/BW detection and agent neutralization technologies can be used or adapted to counter terrorist use of these weapons. In concert with local law enforcement and intelligence authorities, better NBC-related consequence management planning, integration, and exercise support would fill some gaps in counterterrorism capabilities. Finally, the net impact of the study was an increase of \$225 million in the FY 1998 - 2003 FYDP for: i) BW detection and warning equipment (in particular, the NBC Joint Warning and Reporting Network (JWARN), the Joint Biological Point Detection System (JBPDS), and JBREWS); ii) equipment to enhance the NBC target defeat and counterterrorism capabilities of the U.S. Special Operations Command (USSOCOM); and iii) equipment to improve DoD's consequence management capabilities.

The Effects of Chemical and Biological Warfare on Air Base Combat Operations. This comprehensive study completed by the Air Force assessed the impact of CW and BW attacks on forward air base operations by surveying the Service's institutional knowledge, reviewing previous technical assessments and studies, conducting a field exercise, and examining training programs. The study pointed out the need for improvements in individual and collective protection, new training standards, automated detectors, base-level contamination assessment models, and education for senior leadership on operations in contaminated environments. It also indicated a need for greater research and analysis, realistic field exercises, and the development of new

policies and procedures for sustaining operations in a CW/BW contaminated environment. This study led to the creation of the "Air Force NBC Ability-to-Survive-and-Operate" Integrated Process Team (IPT) to oversee passive defense activities in coordination with the Air Force's overarching Counterproliferation IPT (see section 5.1.5 below).

5.1.4 The Counterproliferation Support Program. At the heart of DoD's Counterproliferation Initiative is the Counterproliferation Support Program which seeks to leverage ongoing R&D and acquisition activities to expedite the fielding of enhanced capabilities to counter NBC/M threats. The Counterproliferation Support Program was established by the Deputy Secretary of Defense in August 1994 to address key shortfalls in counterproliferation capabilities identified by the NPRC. The ATSD(NCB) and his Deputy for Counterproliferation were tasked with implementing the program, doing so in close consultation and coordination with the NPRC/CPRC, the Joint Staff and JROC, the CINCs, the Services, DoD Agencies, and cognizant components of OSD. This cooperation is ongoing and continuing.

Mission of the Deputy for Counterproliferation. ATSD(NCB) and his Deputy for Counterproliferation serve as the central point of contact for DoD counterproliferation R&D and acquisition programs and are responsible for managing the Counterproliferation Support Program. DATSD(NCB)(CP)'s mission is to: i) provide management oversight for DoD's Counterproliferation Initiative to ensure it fully supports the President's policy to limit the spread of and contain the threat from NBC/M; ii) manage the Counterproliferation Support Program; and iii) ensure coordination of DoD counterproliferation R&D and acquisition efforts with DOE, U.S. Intelligence, and other federal agencies. Oversight of the Counterproliferation Initiative is accomplished by: i) participating in Program Objective Memorandum (POM) and Programming, Planning and Budgeting System reviews, Departmental planning and policy development, and acquisition oversight activities; ii) serving as facilitator across individual program boundaries; and iii) interacting with the Joint Staff, JROC, the Deterrence/Counterproliferation JWCA, and the CINCs to ensure that their counterproliferation priorities are adequately addressed. In its role as interagency integrator and coordinator of programs related to counterproliferation, the Deputy for Counterproliferation seeks to maximize the payoff from the national investment in counterproliferation-related activities, facilitate interactions between the DoD R&D and acquisition communities and other U.S. Government agencies, and identify non-DoD programs to meet CINC and other DoD user needs.

Counterproliferation Mission Statement

The mission of the Counterproliferation Office is to advocate, focus, and accelerate acquisition capabilities to ***prevent*** proliferation of weapons of mass destruction and to ***prevail*** decisively when confronted with their use.

The Counterproliferation Mission Statement reflects the goal of the Counterproliferation Support Program, whose purpose is to improve specific military counterproliferation capabilities by: i) building on ongoing programs in the Services, DoD Agencies, DOE, and U.S. Intelligence; ii) focusing on the most critical counterproliferation shortfalls to address major gaps in deployed

capabilities (as reflected in the CINC required capabilities and the ACEs); iii) leveraging existing program funding to more rapidly field capabilities by accelerating the deliverables of DoD programs (i.e., seek the 70% solution, leave the 100% solution to longer term R&D); iv) identifying and enhancing the development of high payoff technologies to accelerate capabilities to the warfighter; v) identifying and promoting key non-materiel initiatives which complement technological advances; and vi) transitioning Counterproliferation Support Program projects to the Services as soon as practicable. By leveraging existing sponsor funding and funding efforts with a strong and high level military component or CINC support, the Counterproliferation Support Program can expedite the transition of project development and acquisition responsibilities to the Services. The expedited acquisition process embodied in the ACTD process is ideal for achieving these objectives, and the Counterproliferation Support Program seeks to use ACTDs as the vehicle for rapid evaluation, demonstration, and fielding of new and enhanced military capabilities.

The Counterproliferation Support Program budget request for FY 1998 is \$104.7 million, up from the \$93.7 million received for FY 1997. This year, the Counterproliferation Support Program is focusing its investments in 8 of the 15 counterproliferation ACEs, as shown in Table 5.2. Nearly 80% of its FY 1998 budget is allocated in the areas of remote detection, characterization, and early warning of BW agents (DoD ACE priority 1) and detection and defeat of NBC/M and underground facilities with minimal collateral effects (DoD ACE priorities 2 and 3). For FY 1998, the Counterproliferation Support Program budget represents approximately 2% of DoD's total investment in counterproliferation. Table 5.2 also compares Counterproliferation Support Program funding with the overall DoD investment in counterproliferation. By focusing its budget on high payoff areas and leveraging existing programs by adding funding to accelerate project schedules and deliverables, enhancements in counterproliferation capabilities are being achieved in the near term, and, by the end of the decade, significant advancements in operational capabilities in most of the counterproliferation ACEs will be achieved.

New Project Starts and Management/Oversight Accomplishments. New project starts in FY 1997 implemented since last year's CPRC report include: i) the follow-on Counterproliferation Counterforce ("CP2") ACTD; ii) the JBREWS ACTD for early warning of BW attack; iii) the Consequence Management "911-BIO" ACTD; and iv) the Cooperative Army/Navy Hard Target Tactical Missile System for hard and underground target defeat. These projects are described in more detail in the subsections that follow. Key management/oversight accomplishments of the Counterproliferation Support Program include: i) providing technical direction for the 1996 Counterproliferation Study; ii) working with the Joint Staff (Force Structure, Resources, and Assessments, J-8) Warfighting Analysis Division to improve their NBC weapons technical analysis capabilities; iii) working closely with ASD(SO/LIC) and USSOCOM to adapt technologies for specialized SOF use; iv) signing a Memorandum of Understanding (MoU) between ATSD(NCB) and the DIA/CMO for improving interagency cooperation in unattended ground sensor R&D; v) coordinating efforts to establish a cooperative DoD/U.S. Customs Service program to improve efforts to stem NBC proliferation from FSU states, Eastern Europe, and the Baltics; and vi) establishing a counterproliferation website as part of DoD's ACQWeb website.

Counterproliferation On-Line: The "CP WebSite". In late 1996, DATSD(NCB)(CP) began to explore the development of an internet presence in an effort to be more timely and responsive in making information on current and planned activities and programs appropriate for

Table 5.2: Counterproliferation Support Program ACE Investments

Counterproliferation ACEs (in DoD priority order)	FY 1998 Investments [\$M]	
	DoD CP Initiative	CPSP ^a
1. Detection, Identification, and Characterization of BW Agents	191.1	41.0
2. Detection, Characterization, and Defeat of NBC/M Facilities with Minimal Collateral Effects	83.8	41.3
3. Detection, Characterization, and Defeat of Underground Facilities with Minimal Collateral Effects		
4. Theater Ballistic Missile Active Defense	3,217.5	-
5. Support for Special Operations Forces and Defense Against Paramilitary, Covert Delivery, and Terrorist NBC Threats	151.1	13.1
6. Provide Consequence Management	21.5	1.3
7. Cruise Missile Defense	18.1	-
8. Collection, Analysis, and Dissemination of Actionable Intelligence to Counter Proliferation	0.8 ^b	-
9. Robust Passive Defense to Enable Sustained Operations on the NBC Battlefield	364.9	1.0
10. BW Vaccine RDT&E and Production to Ensure Stockpile Availability	64.5	-
11. Target Planning for NBC Targets	5.7	5.7
12. Prompt Mobile Target Detection and Defeat	178.0	-
13. Detection, Tracking, and Protection of NBC/M and NBC/M-Related Materials and Components	3.0	1.3
14. Support Export Control Activities of the U.S. Government	16.2	-
15. Support Inspection and Monitoring Activities of Arms Control Agreements and Regimes	569.9	-
• TOTALS:		\$4,886.1 \$104.7

^a Includes project integration/oversight support.^b Please see the Intelligence Annex to this report for additional information.

public release more readily available. This internet presence was unveiled in February 1997 as the "CP WebSite", located on the OSD Acquisition and Technology ACQWeb (or addressable directly at <http://www.acq.osd.mil/cp>). The main purpose of the CP WebSite is to disseminate information to U.S. taxpayers, Congress, and the press; but this information is also available to users worldwide. Choosing ACQWeb as the CP WebSite's host allowed the site's web spinners to leverage OSD's existing information review, dissemination, and security vehicles to meet changing consumer demands for information. Thus far, the CP WebSite is being accessed more than 1,000 times per week by users from within the U.S. and abroad. Users from outside the U.S. include Russia, Ukraine, China, the European and Scandinavian countries, Canada, Japan, South Korea, Australia, and Indonesia. The CP WebSite currently offers an ODATSD(NCB)(CP) Staff Directory, an online version of the 1996 CPRC report to Congress, a large collection of links to government and other counterproliferation-related websites, and a series of links to searchable archives for government and congressional records and relevant articles appearing in the mainstream press. Planned additions to the CP WebSite for 1997 include: i) summaries of projects supported by the Counterproliferation Support Program, ii) an area for commentary from the

DATSD(NCB)(CP) on issues of current concern, iii) addition of a topically ordered index, and iv) layout and graphic enhancements to make the site more user-friendly.

5.1.5 Other Key Activities Associated with DoD's Counterproliferation Initiative.

Several other activities and developments impacting DoD's Counterproliferation Initiative have occurred since the CPRC's May 1996 report. They are discussed below.

International Cooperative Efforts to Counter Proliferation. DoD is continuing to work with long-standing allies in Europe and the Pacific region to develop common approaches for countering proliferation. DoD played the leading role in moving counterproliferation to the top of NATO's agenda. NATO's Senior Defense Group on Proliferation (DGP), co-chaired by the United States and a European ally (currently Italy), was established in 1994 to determine the range of alliance and national capabilities required to address NBC/M proliferation risks and recommend improvements in NATO's defense posture to counter these threats. NATO's counterproliferation initiative is an integral part of the alliance's adaptation to the post-Cold War strategic environment. As part of NATO's strategic reorientation toward greater security responsibilities beyond Europe, the DGP has recommended improvements in NBC protection of deployed allied forces operating beyond NATO's periphery where the military dangers posed by NBC/M proliferation are greatest. The DGP has also recommended steps to ensure NATO development of needed defenses against BW threats, which are of particular concern. In June 1996, the DGP presented its recommendations to NATO defense and foreign ministers, stressing the importance of developing a core, integrated set of capability enhancements and force improvements. In many of these areas, NATO already has, or is on the way to developing, the requisite capabilities. DGP findings are intended to give impetus and an added rationale for fielding such capabilities, as well as to demonstrate how supplementing this nucleus of capabilities with other means – including layered defenses against theater ballistic missile attack, special munitions for NBC agent defeat and hardened NBC targets, computer modeling and simulation, and medical countermeasures – would strengthen the alliance's overall ability to discourage NBC proliferation, deter the threat or use of NBC weapons, and protect against NBC attacks.

In the Pacific and Middle East regions, U.S. friends and allies have also recognized the growing security risks posed by proliferation. DoD has collective defense arrangements with many nations in the Pacific region and conducts combined operations with their militaries. For example, DoD has established a regular dialogue with Australia to forge common approaches to improving military capabilities in the face of NBC risks. DoD is also planning to initiate a dialogue with South Korea on these issues, and a counterproliferation seminar will be conducted with Japan this summer. In the Middle East and Persian Gulf regions, DoD has held discussions with longtime friends and allies on NBC defense preparedness. A counterproliferation working group with Israel has been established to discuss common approaches to NBC/M threats. Discussions have also been held with Kuwait, and in the near future these bilateral discussions will be expanded to include other U.S. friends and potential coalition partners in the region. These international activities demonstrate that the U.S. is not alone in its concerns for the defense dimension of NBC/M proliferation. DoD remains committed to building international partnerships with allies and friends whose security and national interests are threatened by NBC/M proliferation.

The Air Force Counterproliferation Integrated Process Team (CIPT). The Air Force has established the CIPT to plan and coordinate all Air Force efforts dealing with the challenges of NBC warfare. The CIPT is preparing an Air Force Counterproliferation Master Plan to coordinate Air Force counterproliferation activities and is implementing the recommendations of the Air Force's study on "The Effects of Chemical and Biological Warfare on Air Base Combat Operations" described above. The CIPT is organized around six counterproliferation-related functional areas: command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR); nonproliferation/deterrence; theater air campaign/counterforce/active defense; air base operability; force protection; and requirements/acquisition.

Science and Technology Strategic Planning for Counterproliferation. The 1997 *Joint Warfighting Science and Technology Plan* (JWSTP) provides a Joint science and technology (S&T) perspective across the Services and Defense Agencies for the purpose of assuring that the DoD S&T program adequately supports high-priority Joint Warfighting Capability Objectives (JWCOS). While these JWCOS are not all inclusive, they are validated by the JROC as being important to CINC mission needs. The JWSTP emphasizes Advanced Technology Demonstrations (ATDs) and ACTDs that transition innovative concepts and mature technologies to the warfighter faster and more cost effectively than traditional acquisition mechanisms. "Chemical/Biological Warfare Defense" and "Countering WMD" are two of the ten JWCOS addressed in the 1997 JWSTP. The JWSTP also highlights technology development efforts in the areas of NBC contamination avoidance, point detection, early warning, individual and collective protection, and decontamination. Counterproliferation-related ATDs and ACTDs in the areas of NBC passive defense and counterforce are also described in the JWSTP. The 1997 JWSTP and JWCO-supportive elements of the DoD S&T program continue to receive funding priority in the President's Budget and the FYDP.

5.2 Status and Accomplishments of DoD Proliferation Prevention Programs

5.2.1 Relevant Counterproliferation ACEs and DoD Policy Perspectives for Proliferation Prevention. DoD's role in proliferation prevention involves working with U.S. Intelligence to identify candidate proliferants before they can acquire or expand their NBC/M capabilities (DoD ACE priorities 8 and 13); supporting U.S. Government export control activities (DoD ACE priority 14); providing inspection, monitoring, implementation, and verification support for arms control treaties and regimes (DoD ACE priority 15); and, if so directed by the National Command Authority, planning and conducting interdiction missions to thwart proliferation activities (DoD ACE priorities 2, 3, 5, and 11).

5.2.2 New DoD Initiatives in Proliferation Prevention. The DoD/U.S. Customs Service Cooperative Program is a new start for FY 1997.

DoD/U.S. Customs Cooperative Program. In the FY 1997 NDAA (Section 1424), Congress authorized DoD, in cooperation with the U.S. Customs Service, to develop and implement a training and technical assistance program to assist border enforcement authorities in the states of the FSU, Eastern Europe, and the Baltic states in preventing the proliferation of NBC/M and related materials. The principal objectives of this program are to: i) assist in the

establishment of a professional cadre of border enforcement personnel trained to detect, identify, interdict, and investigate all aspects of smuggling and trafficking related to NBC weapons, components, dual-use items, and delivery systems; and ii) deliver technical assistance to enhance and improve the ability of these countries to interdict materials of concern. Initial country assessments are followed up with in-country training programs. The first countries to receive training (starting in late FY 1997) will be Romania, Moldova, Bulgaria, and Slovenia. These countries already have undergone customs related assessments as part of other programs. The On-Site Inspection Agency (OSIA) is the executive agent for the program and will be responsible for its day-to-day operations and for leading the country assessment and training teams. Additional project details are provided in Table 5.3 and in Appendix C (Table C.9).

5.2.3 Counterproliferation Support Program Projects in Proliferation Prevention.

Counterproliferation Support Program projects in proliferation prevention include: i) development, deployment, and transition to the Navy of the Specific Emitter Identification (SEI) system; ii) a joint DoD/FBI project to adapt DoD technologies, techniques, and training to enhance the capabilities of foreign law enforcement authorities to prevent NBC/M proliferation at its source; iii) Integrated Proliferation Prevention and Open Source Monitoring activities; and iv) support for the activities of ATSD(NCB)'s Deputy for Nuclear Matters. The status of these projects is summarized below and additional details are provided in Table 5.3 and in Appendix C (Table C.1 and Table C.4 for the SEI system).

The Counterproliferation Support Program, in partnership with the Navy, has been successful in deploying the SEI prototype system to improve capabilities to identify and facilitate the tracking of ships at sea suspected of transporting NBC/M and related materials. Deployment of the SEI system began in April 1995, six months ahead of schedule, and currently 32 units are deployed. The project transitions to the Navy in FY 1998, and no additional Counterproliferation Support Program funds are budgeted for this project after FY 1997. The Navy intends to continue SEI system procurement by upgrading existing deployed systems to the SEI configuration (see subsection 5.2.4).

The Counterproliferation Support Program is continuing to support the joint DoD/FBI effort to deter, interdict, and prevent proliferation and acquisition of NBC/M by organized crime groups and individuals in Eastern Europe, the Baltic States, and states of the FSU. The DoD and FBI, in collaboration with the DOE, U.S. Intelligence, the Department of State, and the U.S. Customs Service, are developing counterproliferation training courses for foreign law enforcement agencies to prevent NBC/M and related materials from leaving their countries. A key focus is to adapt DoD technologies, operational capabilities, and training expertise to this endeavor. Key accomplishments since last year's report include site surveys in Kazakhstan and Uzbekistan to assess training and assistance needs, preparation and approval of a course curriculum, and completion of final preparations for the first offering of the course scheduled for Kazak law enforcement officers in June 1997 at the International Law Enforcement Academy in Budapest. Training courses will continue at the rate of four basic counterproliferation courses per year for the next three years, along with specialty courses as the need arises. OSIA serves as the executive agent for the program and is responsible for its day-to-day operations. The specific level of funding for this project in FY 1998 has not been determined, but funding is expected to be

reprogrammed from other budgeted Counterproliferation Support Program projects consistent with other funding priorities.

The Counterproliferation Support Program, through its Integrated Proliferation Prevention and Open Source Monitoring project, is working to provide open source data collection, dissemination, research, and analysis of worldwide NBC/M proliferation activities. Through international conferences and training activities it is also working to develop international norms to stem NBC/M proliferation in critical countries. The Counterproliferation Support Program also supports ATSD(NCB)'s Deputy for Nuclear Matters in his continuing efforts to support DoD's oversight of DOE's nuclear stockpile stewardship responsibilities, the Nuclear Weapons Council and other senior advisory groups, policy formulation for operational nuclear weapons safety and control, and management activities associated with DoD nuclear stockpile responsibilities. ATSD(NCB)'s responsibilities in these areas extend well beyond counterproliferation issues and would have to be borne even in the absence of the Counterproliferation Support Program.

5.2.4 DoD Proliferation Prevention Programs Strongly Related to Counterproliferation. Several DoD Agency and Service programs are also addressing counterproliferation ACEs in proliferation prevention. These programs are described below and in Appendix C which provides additional details on program accomplishments and milestones. DoD and U.S. Intelligence activities and programs in proliferation prevention are discussed in the Intelligence Annex.

The Cooperative Threat Reduction (CTR) Program. Several ongoing projects under the CTR Program, managed by ATSD(NCB)'s Deputy for Cooperative Threat Reduction (DATSD(NCB)(CTR)), play a major role in proliferation prevention. Under the CTR Program, DoD assists states of the FSU to destroy, transport, store, disable, and safeguard NBC weapons and related materials and components; establish verifiable safeguards against their proliferation; facilitate the demilitarization of defense industries and conversion of military technologies and capabilities to civilian purposes; expand military-to-military contacts between the U.S. and FSU states; and support International Science and Technology Centers to aid in transitioning former FSU weapons scientists to peaceful endeavors. DATSD(NCB)(CTR) works closely with DOE in these matters. (See Section 6.3.4.)

Key accomplishments include: i) helping Ukraine, Belarus, and Kazakstan to become non-nuclear weapons states; ii) delivering 117 rail car conversion kits to enhance the physical security of nuclear weapons and warheads in transit; iii) completing the foundation for Phase I of the Fissile Material Storage Facility at Mayak, Russia; iv) eliminating 64 submarine launched ballistic missile (SLBM) launchers and dismantling 81 Intercontinental Ballistic Missiles (ICBMs) and 20 heavy bombers; v) closing and sealing 59 of 194 nuclear weapons test tunnels and bore holes at Russia's Degelen Mountain test tunnel complex; vi) delivering three mobile chemical analytical laboratories in support of CW destruction activities; vii) establishing 17 joint venture partnerships between U.S. companies and FSU defense enterprises formerly associated with NBC/M production; viii) re-employing nearly 15,000 former Soviet weapons scientists and engineers on peaceful, civilian projects; ix) conducting 28 facility audits and examinations of CTR assistance activities through the end of 1996; and x) funding 177 exchanges between U.S. and FSU defense

establishments. Additional details for these programs are provided in Table 5.3 below and in Appendix C (Table C.10).

OSD Critical Technology Support Program. This program develops and publishes the *Militarily Critical Technologies List* (MCTL), a detailed and structured compendium of technologies DoD assesses as critical to maintaining superior U.S. military capabilities. It applies to all mission areas including counterproliferation. Part I of the MCTL, *Weapons Systems Technologies*, includes technologies whose technical performance parameters are at or above the minimum level necessary to ensure continuing superior performance of U.S. military systems. Part II, *Weapons of Mass Destruction*, addresses technologies required for the development, integration, or employment of NBC/M. Part III, *Critical Developing Technologies*, covers technologies which will enable increasingly superior military performance or an ability to maintain a superior capability more affordably. The MCTL is used as a technical foundation for U.S. export control proposals, licensing and export control processes, and intelligence collection. Technologies that a proliferant might use and that might need to be countered are addressed in Part II. Parts I and III cover those technologies that U.S. forces could use to thwart an NBC/M program or fight in an NBC environment. Technology Working Groups made up of experts from the U.S. Government, academia, and industry review and update the MCTL regularly to ensure key technologies are included and that new technologies applicable to counterproliferation are identified. The MCTL is reviewed on an ongoing basis and updated as required. The program is managed by the Deputy Under Secretary of Defense for International and Commercial Programs (DUSD(ICP)) through the Director for Multinational Technology Programs. Additional project details are provided in Table 5.3 and in Appendix C (Table C.9).

Defense Technology Security Administration. DTSA's mission is to develop and implement DoD policies regarding international transfers of dual-use and munitions items to ensure such transfers are consistent with U.S. national security interests. DTSA coordinates DoD's review of export licenses, referred by the Departments of State and Commerce, for their potential to contribute to the proliferation of NBC weapons, missile delivery systems, and other significant military capabilities. DTSA develops policies regarding the transfer of defense-related systems and technologies, participates in international export control negotiations, and provides technical support to diplomatic, intelligence, and enforcement efforts. Key accomplishments include: i) enhancement of the new multinational export control framework (the "Wassenaar Arrangement"); ii) review of over 18,000 export license applications for military and dual-use technologies; and iii) U.S. export control cooperation programs with other nations. Additional project details are provided in Table 5.3 below and in Appendix C (Table C.12).

On-Site Inspection Agency Programs. OSIA is responsible for several activities associated with countering proliferation. OSIA is a Joint Service DoD organization responsible for implementing inspection, escort, and monitoring requirements under the verification provisions of several U.S. international arms control treaties and confidence-building agreements involving NBC weapons. Key accomplishments in NBC weapons arms control treaties and agreements include: i) providing technical advisory support to the Comprehensive Test Ban Treaty (CTBT) Interagency Backstopping Group and the U.S. Delegation to the Conference on Disarmament; ii) providing expertise on on-site inspection to the CTBT Verification Monitoring Task Force On-Site Inspection Subgroup; iii) supporting the Intermediate Range Nuclear Forces (INF) Treaty, now in

its ninth year; iv) supporting the Strategic Arms Reduction Treaty (START I), now entering its third year; v) planning and preparing for verification operations in support of START II ratification; vi) maintaining a capability to monitor Russian nuclear tests under the auspices of the Threshold Test Ban Treaty (TTBT) and Peaceful Nuclear Explosions Treaty; and vii) completion of mock inspections and exercises as part of planning and preparation for the entry-into-force of the Chemical Weapons Convention (CWC) on April 29, 1997.

OSIA's support of Safeguards, Transparency, and Irreversibility (STI) initiatives focus on inspection and escort support for anticipated international agreements involving Mutual Reciprocal Inspection measurements of plutonium and highly enriched uranium components of disassembled nuclear weapons, and monitoring of Russian plutonium production reactors in accordance with the Plutonium Reactor Shutdown Agreement. OSIA is supporting DoD and DOE in STI talks with Russia and over the last year has escorted Russian teams to Rocky Flats, Lawrence Livermore National Laboratory (LLNL), and Oak Ridge National Laboratory (ORNL).

OSIA also serves as the executive agent in support of several DoD counterproliferation programs. It is the executive agent for DoD in support of the UN Special Commission (UNSCOM) on Iraq and for operations to identify and destroy Iraq's NBC/M infrastructure under UN Security Council Resolutions 687 and 715. OSIA also serves as executive agent for the DoD/FBI and DoD/U.S. Customs Service counterproliferation programs to deter the proliferation, acquisition, transfer, and transportation of NBC/M and related materials in Eastern Europe, the Baltic countries, and states of the FSU (as discussed in subsections 5.2.2 and 5.2.3 above). Additional OSIA project details are provided in Table 5.3 below and in Appendix C (Table C.11).

The Nuclear Treaty Program Office and CTBT Implementation. The CTBT was signed at the United Nations in New York on September 24, 1996, after nearly three years of negotiations. In anticipation of this event DoD established (in March 1996) a Deputy for Nuclear Treaty Programs (DATSD(NCB)(NTP)) serving under the ATSD(NCB) as CTBT Treaty Manager. The Deputy for Nuclear Treaty Programs oversees an integrated, DoD-wide CTBT implementation and compliance program, which includes: i) implementation of International Monitoring System (IMS) stations on U.S. territory or for which the U.S. has responsibility under the treaty; ii) development of the International Data Center (IDC) and a National Data Center to collate CTBT-related data; iii) transition of the prototype International Data Center (IDC) to its permanent location at the Headquarters of the CTBT Organization in Vienna; iv) R&D activities in nuclear test monitoring techniques (e.g., involving seismic, hydroacoustic, infrasound, and radionuclide signatures) satisfying congressional requirements and presidential safeguards; and v) treaty implementation and technical support. Key accomplishments since last year's report include: i) streamlined management of CTBT verification R&D programs under DSWA to improve CTBT implementation; ii) continued development of the global continuous threshold monitoring network and CTBT data fusion knowledge base; and iii) continued data collection, storage, fusion, and distribution technology development for the IDC and commencement of IDC transition to the Provisional Technical Secretariat in Vienna. The Nuclear Treaty Program Office is also responsible for providing DoD technical support in the areas of the nuclear Nonproliferation Treaty, fissile materials cut-off negotiations, and enhancement of nuclear safeguards through its enhanced nuclear safeguards program. Additional project details are provided in Table 5.3 and in Appendix C (Table C.8).

DSWA Nuclear Arms Control/CTBT Technology Support Program. This consolidated Research, Development, Test, and Evaluation (RDT&E) program develops capabilities and technologies, under the oversight of the Deputy for Nuclear Treaty Programs, to support the preparation, implementation, compliance, and verification of the CTBT. DSWA serves as the executive agent for DATSD(NCB)(NTP)'s CTBT Implementation Program described above. This program also consolidates former Air Force treaty verification activities. Additional project details are provided in Table 5.3 and in Appendix C (Table C.8).

DSWA Chemical Biological Arms Control Technology (CB ACT) Program. DSWA's CB ACT office has the lead within DoD for developing the technologies required to implement chemical and biological arms control treaties and agreements. The CB ACT office conducts RDT&E activities to meet DoD-identified treaty implementation, verification, monitoring, and inspection needs. The CB ACT program is working to protect U.S. national security interests, improve the effectiveness of verification efforts, assist in meeting U.S. legal obligations imposed by treaty provisions, support U.S. policy development, minimize inspection and implementation costs, and enhance the safety of treaty inspections. DSWA's designation as a combat support agency adds an important additional focus of considering the impact of CW/BW arms control agreements on warfighting commanders and their missions.

The current CB ACT program concentrates on the following six activities: i) *Technical Support to Negotiations*, including CWC compliance and implementation, bilateral arms control negotiations with Russia, the Biological Weapons Convention (BWC) Review Conferences, and exchange visits to military biological facilities under the auspices of the U.S./United Kingdom/Russia Trilateral Statement; ii) *Compliance Support/Data Management*, by supporting the development of DoD data and notification management systems consistent with treaty and international agreement reporting provisions, such as the CWC Information Management System, the Chemical Agent Management Information Network, and a proposed BWC data management system; iii) *Inspector Safety Monitoring*, by developing a real-time portable CW agent monitor for the detection of trace levels of volatile CWC-scheduled chemicals to assure that inspectors are not exposed to chemical hazards; iv) *Off-Site Monitoring*, by evaluating technologies for use in monitoring the perimeter of facilities undergoing CWC challenge inspections; v) *Non-Destructive Evaluation*, by developing techniques for the non-invasive interrogation of munitions and containers; and vi) *On-Site Analysis*, by providing state-of-the-art sample collection, screening, preparation, and determinative analysis methods and equipment integrated into a modular, field portable, "fly-away", On-Site Lab which was used to support UN activities in Iraq and has been adapted for use in the CWC compliance program. Additional information on this program may be found in Table 5.3 and in Appendix C (Table C.8).

DSWA START Verification Technology Programs. DSWA is responsible for the START Verification Technology program, which develops technologies to enable verification of the START I, START II, and follow-on nuclear weapons treaties. Technologies being developed include non-intrusive detection of nuclear weapon systems and reentry bodies. Key accomplishments include achieving full operational capability of the START Central Data System, development of a fieldable prototype gravity gradiometer for use in treaty verification, and development of technologies and procedures that enable the monitoring of nuclear weapons

throughout their life cycle. Additional project details are provided in Table 5.3 and in Appendix C (Table C.8).

Table 5.3: Key DoD Counterproliferation Programs in Proliferation Prevention

Program/Project Title	Project Description	DoD ACE	Agency	FY 98 Budget [\$M]	PE No.
CP Support Program					
• Joint DoD/FBI Proliferation Prevention Program	• Adapt DoD technology and training expertise to enhance capabilities of foreign law enforcement agencies in stemming proliferation at its source	13, 14	ATSD (NCB) OSIA	.*	605160D
• Integrated Prolif. Prev. and Open Source Monitoring	• Integrated data collection, research, and analysis in support of proliferation prevention	13, 8	ATSD (NCB)	1.275	603160D
• Nuclear Matters Projects	• Assessments of reliability, safety, surety, and sustainability of the nuclear stockpile	5, 2, 3	ATSD (NCB)	1.914	605160D
Strongly Related CP Programs					
• DoD/U.S. Customs Proliferation Prevention Program	• Expand and improve efforts to prevent proliferation and acquisition of NBC/M and related materials in the FSU, Eastern Europe, and the Baltics	14, 13	OSD OSIA	3.000**	O&M
• CTR Programs	• Assisting FSU states in destroying, controlling, and demilitarizing NBC/M and associated infrastructure	15	ATSD (NCB)	382.200	FSU Threat Reduction
• OSD Critical Technology Support Program	• Preparation of the <i>Militarily Critical Technologies List</i> to support export control activities	14	DUSD (ICP)	2.690	605110D
• DTSA Activities	• Develops and implements DoD policies regarding military and dual-use exports and coordinates DoD's review of export licenses	14	DTSA	10.542	O&M
• OSIA Programs	• Implementation of inspection, escort, monitoring, and treaty verification measures for nuclear weapons arms control treaties and agreements • Support for CW and BW agreements • CTBT technical advisory support • Support for STI agreements • Support for UNSCOM operations in Iraq	15	OSIA	44.877 35.077 1.014 2.428 5.343	O&M O&M/Proc. O&M O&M O&M
• Nuclear Arms Control/CTBT Technology Support Program	• RDT&E of technologies to support CTBT implementation, compliance, and verification • Enhanced nuclear safeguards	15	DSWA	56.299 1.701	603711H O&M
• DSWA Chemical Biological Arms Control Technology Program	• RDT&E in implementation, verification, monitoring, and inspection support for CW/BW arms control initiatives, including the CWC and BWC	15	DSWA	9.589	603711H
• DSWA START Verification Technology Program	• RDT&E of technologies to enable verification of START and follow-on nuclear weapons treaties	15	DSWA	8.072	603711H
• USAF Nuclear Detonation Detection System	• Integrates and supports nuclear detonation detection sensors on GPS satellites; develops and procures ground system for nuclear detonation reporting	15	Air Force	14.145 9.155	305913F procurement
• Navy SEI System Support Program	• Procurement and fleet integration of SEI system upgrades to aid in tracking NBC/M-related shipments	13	Navy	1.626	204575N

* Work continues on this program using funds authorized and appropriated in prior years. Although no funds were specifically identified for the program in the President's FY 1998 budget request, DoD may seek to reprogram funds as needed to continue work on the program.

** Estimate based on congressional requirements to spend not more than \$9.0 million over 3 years.

Air Force Nuclear Detonation Detection System. This program provides the capability to detect endo- and exo-atmospheric nuclear detonations worldwide. Key accomplishments include integration of new nuclear detonation phenomenology sensors on Global Positioning System (GPS) Block IIR satellites and testing of ground processing and display system software and hardware. Additional project details are provided in Table 5.3 and in Appendix C (Table C.5).

Navy SEI Support Program. The Navy has been working with the Counterproliferation Support Program to expedite the deployment of the SEI system by providing O&M and procurement support; accelerating system development; and providing testing and fleet integration support. In FY 1998, the program transitions to the Navy which will continue implementation of the SEI system into the fleet by upgrading existing (and fleet-integrated) signal processors. Fleet integration is scheduled for FY 1999. Additional project details are provided in Table 5.3 and in Appendix C (Table C.4).

5.2.5 Near-, Mid-, and Long-Term Milestones for DoD Proliferation Prevention Programs. Figure 5.2 summarizes the time-phased milestones of the key proliferation prevention activities and programs discussed above.

Project	Program Milestones				
	Near-Term		Mid-Term	Long-Term	
	FY 98	FY 00	FY 02	FY 05	FY 10
• DoD/FBI and DoD/Customs	★ Initiate Country Assessments and Training →				
• SEI System	★ Transition to Navy ★ Fleet Integration				
• Export Controls	MCTL Updates Export License Reviews →				
• Cooperative Threat Reduction	★ 81 ICBMs Eliminated 497 ★ ★ 64 SLBM Launchers Eliminated 548 ★ ★ 20 37 ★ Heavy Bombers Dismantled ★ 59 194 ★ Nuclear Test Tunnels and Bore Holes Sealed				
• CTBT	★ IMS Installation ★ Entry-Into-Force → Operating ★ IDC Transition ★ IMS, IDC Operational U.S. Facilities				
• START	★ Treaty Year 3 ★ Continue START II → Continue Inspections				
• INF Treaty	★ Treaty Year 9 ★ Continue Inspections → ★ Inspections End Treaty Continues				
• Nuclear Detonation Detection	★ Block IIR ★ Sensor Integration → ★ Block IIF ★ Next Generation on GPS Satellites				
• CWC	★ Entry Into Force ★ Technology Development/Implementation → ★ Bilateral Destruction Agreement				
UNSCOM Support	★ Support to Inspection Operations in Iraq →				

Figure 5.2 Time-Phased Milestones of Proliferation Prevention Programs

5.3 Status and Accomplishments of DoD Strategic and Tactical Intelligence Programs

5.3.1 Relevant Counterproliferation ACEs and DoD Policy Objectives in Strategic and Tactical Intelligence. The principal focus of DoD intelligence activities is to provide proliferation-related information that is clear, accurate, and timely enough to support, first and foremost, the needs of the military commanders (DoD ACE priority 8). These activities include DoD support to the national strategic intelligence effort down to providing the soldier in the field with tactical intelligence specifically related to his immediate situation. DoD works closely with U.S. Intelligence to perform these activities. The Counterproliferation Support Program is also making contributions in this area as well. These projects are summarized in Table 5.4 below and in Appendix C. A more thorough description of how DoD intelligence activities support counterproliferation policy and strategy objectives may be found in the Intelligence Annex to this report.

5.3.2 New DoD Initiatives in Strategic and Tactical Intelligence. See the Intelligence Annex to this report.

5.3.3 Counterproliferation Support Program Projects in Strategic and Tactical Intelligence. Several Counterproliferation Support Program projects in the proliferation prevention and battlefield surveillance functional areas are relevant to strategic and tactical intelligence, including: i) the Integrated Proliferation Prevention and Open Source Monitoring project; ii) the Tactical Unattended Ground Sensor (TUGS) and the airborne tactical Forward Looking Infrared (FLIR) sensor being developed for NBC/M and underground facility surveillance, characterization, and BDA; and iii) the incorporation of a mature Automatic Target Recognition (ATR) system into the Joint Surveillance Target Attack Radar System (JSTARS) aircraft for mobile target detection. These projects are described in subsections 5.2.3 and 5.4.2.

In addition to these projects, the High Frequency Active Auroral Research Project (HAARP) is exploring the use of low frequency electromagnetic waves for detecting and imaging underground structures and tunnels. This program had not been considered a high priority by the Administration and was not included in its FY 1997 budget request. However, Congress provided funding for the Counterproliferation Support Program to work with the Air Force Phillips Laboratory to expedite the determination of the viability and military utility of the HAARP concept. A workshop, entitled "Longwave Radio Frequency Imaging of Underground Structures", is scheduled for May 1997 to provide government organizations with an overview of this research area and define a plan for future research. The HAARP transmitter is being upgraded, and a demonstration of the concept's underground facility detection capabilities is currently scheduled for 1997. No FY 1998 DoD funding is currently planned for this Congressional Special Interest Program. Additional project details are provided in Table 5.4 and in Appendix C (Tables C.1 and C.5).

5.3.4 Strategic and Tactical Intelligence Programs Strongly Related to Counterproliferation. The Air Force, in its Remote Optical Sensing Program, is developing an airborne lidar (light detection and ranging) for long range remote sensing applications, including the detection and characterization of NBC weapon production signatures. Additional project details are provided in Table 5.4 and in Appendix C (Table C.5). Additional DoD strategic and

tactical intelligence programs strongly related to countering proliferation are described in the Intelligence Annex to this report.

Table 5.4: Key DoD Counterproliferation Programs in Strategic and Tactical Intelligence

Program/Project Title	Project Description	DoD ACE	Agency	FY 98 Budget [\$M]	PE No.
<u>CP Support Program</u>					
• HAARP Program	• Single source transmission of long wavelength electromagnetic waves for underground structure detection and imaging	3, 8	Air Force	0*	603160D
• Proliferation Prevention Projects	• Integrated Proliferation Prevention and Open Source Monitoring	(See Section 5.2.3)			
• Battlefield Surveillance Projects	• TUGS and FLIR systems RDT&E • Incorporation of mature ATR into JSTARS	(See Section 5.4.2)			
<u>Strongly Related CP Programs</u>					
• Air Force HAARP Support	• Hardware development and operational support	3, 8	Air Force	0*	602601F
• Remote Optical Sensing Program	• Aircraft based long range lidar for remote sensing of NBC weapon production signatures	8, 1	Air Force DIA	0.800	602601F
• Joint DoD/U.S. Intell. Programs	• See Intelligence Annex	(See Intelligence Annex)			

* Currently, no DoD FY 1998 funds are budgeted for this Congressional Special Interest Program.

5.4 Status and Accomplishments of DoD Battlefield Surveillance Programs

5.4.1 Relevant Counterproliferation ACEs and DoD Policy Objectives for Battlefield Surveillance. In the battlefield surveillance area, DoD is improving capabilities to detect, identify, and characterize NBC/M forces and associated infrastructure elements in a timely manner to support targeting, mission/strike planning, counterforce operations, and prompt post-strike BDA activities. Emphasis is being placed on: detection, characterization, BDA, and collateral effects monitoring of underground and surface NBC/M facilities (DoD ACE priorities 2, 3, and 8); focused target planning activities for NBC/M facilities (DoD ACE priority 11); and continuous wide-area surveillance and mobile target detection, particularly NBC-armed mobile missile launchers (DoD ACE priorities 8 and 12). (Programs involving the detection and identification of NBC agents are discussed under the passive defense functional area, Section 5.7.) This effort is being coordinated with U.S. Intelligence; the details of which are provided in the Intelligence Annex.

5.4.2 Counterproliferation Support Program Projects in Battlefield Surveillance. The Counterproliferation Support Program is supporting several projects in this area, including: i) developing enhanced sensor technologies, including the TUGS and airborne tactical FLIR sensor, for NBC/M target surveillance, characterization, BDA, and collateral effects monitoring; ii) development of tactical multi-sensor data fusion techniques and signature collection to support underground target characterization and BDA; iii) integration of NBC/M target characterization, BDA, and collateral effects sensors into unmanned aerial vehicles (UAVs); iv) incorporation of a

mature ATR algorithm and processor system into JSTARS to provide near real-time detection and identification of time critical targets; and v) integrated operational testing of these systems, as part of the Counterproliferation ACTDs (see subsection 5.5.3), to support the rapid fielding of integrated battlefield surveillance and counterforce capabilities. The DOE National Laboratories are also providing technology R&D and technical support for the TUGS and ATR projects. With completion of ATR demonstrations on JSTARS test assets scheduled for later this year, the Counterproliferation Support Program will end funding of this project. BMDO has expressed interest in continuing this ATR project as part of its efforts to improve counterforce operations in support of theater missile defense. DARPA is also involved in ATR R&D activities (see subsection 5.5.4).

Key accomplishments since last year's report include: i) developed tactical FLIR design options, initiated proof-of-principle demonstrations of system modifications, and collected imagery to improve and support weapon delivery testing; ii) constructed and field tested a brassboard TUGS system; iii) continued data collection from representative NBC/M facilities during weapon detonations to evaluate TUGS performance and demonstrate utility; and iv) continued flight testing and capability demonstration of the ATR system on JSTARS test assets. Additional project details are provided in Table 5.5 and in Appendix C (Table C.1).

5.4.3 Battlefield Surveillance Programs Strongly Related to Counterproliferation. These programs are described in the Intelligence Annex to this report.

Table 5.5: Key DoD Counterproliferation Programs in Battlefield Surveillance

Program/Project Title	Project Description	DoD ACE	Agency	FY 98 Budget [\$M]	PE No.
CP Support Program					
• TUGS and Tactical FLIR Sensor Technology Projects	• Development of TUGS and tactical FLIR sensor systems for surveillance, characterization, BDA, and collateral effects monitoring of NBC/M and underground facilities	2, 3, 8	DSWA Air Force DOE	7.700	603160D
• Tactical Multi-Sensor Data Fusion	• RDT&E to support accurate target characterization and BDA of NBC/M and underground facilities	2, 3, 8, 11	DSWA DARPA	0.750	603160D
Strongly Related CP Programs					
• Joint DoD/U.S. Intell. Programs	• See Intelligence Annex	(See Intelligence Annex)			

5.4.4 Near-, Mid-, and Long-Term Milestones in DoD Battlefield Surveillance Programs. Figure 5.3 summarizes the time-phased milestones of the battlefield surveillance programs discussed above, which are part of the ongoing Counterproliferation (CP1) ACTD and candidates for the follow-on CP2 ACTD. Additional program milestone information may be found in the Intelligence Annex to this report.

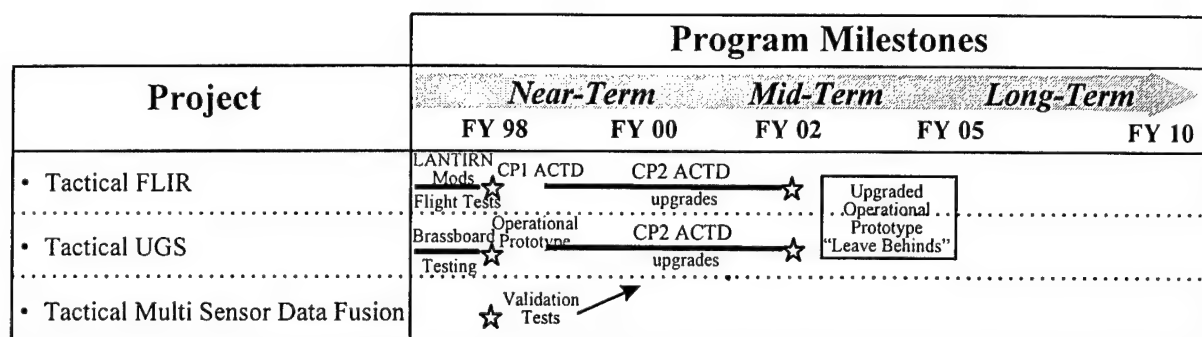


Figure 5.3 Time-Phased Milestones of Battlefield Surveillance Programs

5.5 Status and Accomplishments of DoD NBC/M Counterforce Programs

5.5.1 Relevant Counterproliferation ACEs and DoD Policy Perspectives. In the NBC/M counterforce area, DoD is working to improve capabilities to defeat NBC/M threats before they can be used against U.S., allied, and coalition forces. Service resources are being devoted to maintaining U.S. forces at the highest state of readiness to enable a quick and effective response in regional contingencies throughout the world. Resources are targeted on improving battlefield surveillance and counterforce capabilities to find and destroy NBC/M forces and their supporting infrastructure elements while minimizing collateral effects. Emphasis is on defeating NBC/M facilities, including hardened surface and underground facilities, while minimizing associated collateral effects (DoD ACE priorities 2 and 3). Projects involving advanced weapons for NBC/M target defeat that minimize or mitigate collateral effects are underway as are programs to better understand NBC/M target vulnerability/response and collateral effects phenomenology (DoD ACE priority 11). Detection, tracking, and defeat of mobile NBC/M targets, especially mobile ballistic and cruise missile launchers, are also key counterforce areas (DoD ACE priority 12). Sensors under development provide enhanced target characterization, improved BDA and collateral effects monitoring, and more efficient restrike planning (DoD ACE priorities 2, 3, 8, 12).

5.5.2 New DoD Initiatives in NBC/M Counterforce. The CP2 Counterforce ACTD and the Cooperative Army/Navy Hard Target Tactical Missile System program are new programs initiated since last year's report.

The CP2 Counterforce ACTD. The ongoing Counterproliferation ACTD for NBC/M target defeat (denoted CP1 ACTD) establishes a new baseline for military counterforce capabilities against NBC/M facilities. The second, follow-on Counterproliferation Counterforce ACTD (denoted CP2 ACTD) will continue to address CINC-prioritized shortfalls in counterforce capabilities against hard and underground NBC/M facilities. The CP2 ACTD has been approved for an FY 1997 start. FY 1997 efforts focus on final definition of CINC requirements, selection of appropriately mature technologies for inclusion in the ACTD, and development and approval of a CP2 ACTD Implementation Directive and a Management Plan. These items are scheduled to be in place by June 1997. CP2 ACTD technology development efforts are scheduled to begin in the first quarter of FY 1998 and be completed by the fourth quarter of FY 2002. Based on CP1 ACTD

successes to date, CINC U.S. European Command (USEUCOM) has agreed to sponsor the CP2 ACTD. In addition, CINC U.S. Pacific Command (USPACOM) and CINC U.S. Strategic Command (USSTRATCOM) have expressed interest in sponsoring the development of target planning and decision support tools for the CP2 ACTD. The selection of maturing technologies to be evaluated and demonstrated during the CP2 ACTD will be based on their potential military utility in meeting the high priority counterproliferation required capabilities of the CINCs. The following capabilities are being considered for inclusion in the CP2 ACTD: i) improved counterforce planning and decision support tools; ii) alternative payloads to enhance physical and functional target kills while mitigating collateral effects; iii) standoff precision delivery and improved penetration capabilities by modifying existing or developing weapon systems; iv) improved combat assessment capabilities through improved detection and prediction of collateral effects and improved collection of BDA information; and v) enhanced intelligence support by improving information dissemination, target characterization, and target functional/nodal analysis.

The Cooperative Army/Navy Hard Target Tactical Missile System. In direct response to the counterproliferation ACEs and the CINC counterproliferation required capabilities, the Counterproliferation Support Program is supporting a new initiative in FY 1997 to develop an earth penetrating variant of the Army's Tactical Missile System (TACMS) deliverable by the existing Army M270 tactical missile launcher and eventually by Navy surface ships and submarines. This variant, proposed by the Army TACMS program manager in conjunction with Navy Strategic Systems Programs, makes use of the demonstrated capabilities of the Army TACMS missile system and reentry and penetrator components developed by the Navy to hold the full spectrum of NBC/M-related targets at risk. This project leverages developments in strategic reentry systems technology (including aeroshells, attitude control systems, and guidance systems), advanced penetrator technology, and the Hard Target Smart Fuse (HTSF) under development by DSWA and the Air Force (see subsection 5.5.3). Current efforts are focusing on defining a near-term ATD to support an ACTD involving live fire testing in FY 1999. Funding for FY 1998 is under review.

5.5.3 Counterproliferation Support Program Projects in NBC/M Counterforce. The centerpiece of the Counterproliferation Support Program's NBC/M counterforce activity is the CP1 ACTD currently under way and the follow-on CP2 ACTD. These ACTDs are jointly sponsored by DSWA and CINC USEUCOM and support the rapid fielding of several new NBC/M counterforce capabilities through integrated operational testing of advanced technology prototype weapons, sensors, and target planning tools. The overall objective of the Counterproliferation ACTDs is to develop, demonstrate, and deliver to the CINCs counterforce capabilities to hold NBC/M targets at risk while minimizing collateral effects. The CP1 ACTD is focusing on the delivery of advanced operational capabilities in weapons, sensors, and target planning tools to defeat hard and shallow buried NBC/M targets. The follow-on CP2 ACTD will provide enhanced NBC/M counterforce capabilities against a wider set of potential NBC/M and underground targets.

Projects supporting the CP1 ACTD include: i) developing sensor systems for target characterization and BDA (including the TUGS and tactical FLIR sensors and the tactical multi-sensor fusion project described in subsection 5.4.2); ii) improving the understanding of and developing hazard prediction models for collateral effects release and transport phenomenology; iii) improving the state of knowledge in weapons effects and NBC/M target vulnerability and

response; iv) developing an advanced penetrating weapon, the Advanced Unitary Penetrator (AUP), for hardened or underground target defeat; v) developing a weapon borne sensor (WBS) and the HTSF to enhance the lethality of penetrating weapons against hard and underground targets; vi) developing advanced warheads and payloads for enhanced lethality and functional kill against NBC/M targets; vii) developing the inertial terrain-aided guidance (ITAG) all-weather weapon guidance package designed to be compatible with existing munitions; viii) developing the Munitions Effectiveness Assessment (MEA) and the Integrated MEA (IMEA) targeting tools to assist in targeting, weaponeering, and strike planning against NBC/M facilities; and ix) integrated operational testing, as part of the Counterproliferation ACTD demonstrations, to support rapid user assessment and fielding of these new capabilities. The DOE National Laboratories are also providing technical support to the TUGS, FLIR, and ITAG projects. Counterproliferation Support Program projects in NBC/M counterforce are further summarized in Table 5.6 below and in Appendix C (Table C.1).

Key accomplishments in counterforce projects since last year's report include: i) completion of Phase I integrated demonstrations of the CP1 ACTD, including static and live weapon drops on a simulated BW storage facility to demonstrate the integrated capabilities of sensors, weapons, target planning tools, and collateral effects prediction; ii) demonstration of controlled weapon penetration and detonation depth using the HTSF and successful integration of the GBU-24/HTSF with F-15E and F/A-18 aircraft; iii) scale testing of the line payout system for the WBS; iv) model validation for conventional weapons effects against hard and buried targets; v) accurate prediction of atmospheric transport of hazard plumes during CP1 ACTD demonstrations; vi) continued IMEA tool hazard assessment modeling support to USEUCOM in support of contingency operations; vii) assessment by warfighters of IMEA software as a valuable aid for target planning and weaponeering; viii) completion of software simulation and initiation of ITAG hardware fabrication; and ix) completion of preliminary design definitions and initial trade studies for the Cooperative Army/Navy Hard Target Tactical Missile system.

5.5.4 NBC/M Counterforce Programs Strongly Related to Counterproliferation.

Service and DoD Agency programs are also addressing counterproliferation ACEs in NBC/M counterforce. These programs are described in this subsection.

Hard and/or Deeply Buried Target Defeat Capability (HDBTDC) Program. This JROC and USD(A&T) approved effort is developing non-nuclear concepts to defeat hard and/or deeply buried targets. This Joint Service program was established in response to Mission Need Statements from USSTRATCOM and the Combat Air Force. The Air Force is designated as the lead Service, with participation by the other Services, the Joint Staff, DSWA, OSD, DoD and DOE laboratories, and DIA. Currently, the program is in the "Concept Exploration and Definition" phase of the acquisition process. The program goals and objectives are: i) deny, disrupt, or destroy the highest priority assets essential to the enemy's warfighting ability and which are heavily defended and protectively hardened; ii) develop weapons having operational advantages over existing weaponry in defeating hard and deeply buried targets; and iii) provide improved capabilities that are significant, not marginal. Key targets to be defeated include hardened and/or deeply buried command and control facilities and tunnel surface-to-surface missile storage and assembly complexes. Key program accomplishments include forming an Integrated Product Team (IPT) structure for efficient program development, collection of HDBTDC concepts from industry,

assessment of baseline weapons systems concepts, development of an analysis of alternatives framework and study plan, development of a requirements definition plan, and the formation of an ACTD working group. Efforts are under way to explore the possibility of conducting target defeat concept demonstrations as part of the CP2 ACTD. This program is supported by Air Force and Navy program elements and DSWA's Hard Target Defeat Program described below. Additional details are provided in Table 5.6 and in Appendix C (Tables C.4 and C.5).

DSWA Hard Target Defeat Program. DSWA initiated its Hard Target Defeat Program in FY 1996 to: i) evaluate the hard target defeat problem end-to-end, from detection through counterforce to BDA; and ii) develop improved tactics and technologies to defeat hard targets, especially tunnels. This program supports the HDBTDC IPT with weapon-target interaction analyses for defeating targets that are difficult to counter because of their physical hardness. An IPT has been established to employ existing analysis tools and data bases to determine the physical and functional vulnerability of high value/high risk targets and provide quantitative results to support analysis of alternative target defeat approaches. This program also supports the development of advanced capabilities in tunnel facility characterization, target planning, weapon effects, and functional defeat mechanisms. These efforts complement the NBC/M counterforce activities supported by the Counterproliferation Support Program, including the Counterproliferation ACTDs. Additional project details are provided in Table 5.6 and in Appendix C (Table C.8).

Air Force Agent Defeat Weapon Program. This program was initiated in response to a Combat Air Force Mission Need Statement. The objective of the current Concept Exploration and Definition acquisition activity is to develop an agent defeat weapon to neutralize, destroy, or deny access or immobilize CW/BW agents and their associated weapon and delivery systems. All agent defeat weapon concepts will minimize collateral damage and effects and be deliverable by current Air Force platforms. Key program accomplishments include forming an IPT structure, building a preliminary assessment framework, collecting weapon system concepts from industry and the DoD and DOE laboratories, construction of an empirical lethality model to determine the effectiveness of inventory and conceptual weapons systems against CW/BW agents, and forming an ACTD working group. Additional information is provided in Table 5.6 and in Appendix C (Table C.5).

DSWA Weapons Systems Lethality Program. This program focuses on the development and validation of methodologies and research tools for applied analysis performed under the Counterproliferation Support Program as well as the Force Protection Initiative and other emerging counterterrorism programs (see Section 8.3). It supplies the CINCs with targeting tools for NBC/M and conventional targets and tools for collateral effects and hazard prediction through the USEUCOM-sponsored Counterproliferation ACTDs. Targeting tools are available to other users through the Joint Technical Coordinating Group for Munitions Effectiveness. The program conducts precision and subscale testing and advanced numerical calculations to develop and validate methodologies associated with weapon-target interactions and the transport and dispersal of hazardous NBC materials, including NBC collateral effects releases. Additional project details are provided in Table 5.6 and in Appendix C (Table C.8).

DARPA Surveillance Sensor and Exploitation Systems Program. This RDT&E program is designed to improve capabilities to detect, identify, and track high value, time critical fixed and

mobile targets, including mobile NBC-armed missile launchers and NBC/M facilities and infrastructure elements, by developing sensors to defeat camouflage, concealment, and deception practices and providing near real-time exploitation of wide area imagery. Key accomplishments include: i) development of a foliage penetration (FOPEN) radar concept and verification of systems requirements for a FOPEN Airborne Demonstration Radar; ii) completion of a critical technology demonstration of an ultra-wide band synthetic aperture radar antenna design and automatic target detection/cueing technologies; iii) transitioning target recognition algorithms into

Table 5.6: Key DoD Counterproliferation Programs in NBC/M Counterforce

Program/Project Title	Project Description	DoD ACE	Agency	FY 98 Budget [\$M]	PE No.
CP Support Program					
• Battlefield Surveillance Projects	• See Section 5.4	(See Section 5.4)			
• Collateral Effects Phenomenology Assessment	• Source term characterization and transport prediction, phenomenology experiments, and assessment tool development	2, 3, 11	DSWA	8.000	603160D
• Advanced Weapons Systems (AUP, HTSF, WBS, and ITAG)	• Development of an enhanced penetrating munition for hard and underground target defeat offering expanded compatibility with delivery platforms and an all-weather capability	2, 3	DSWA Air Force DOE	12.600	603160D
• NBC/M Target Planning and Response/Vulnerability Assessment	• Experimental and analytical analyses of NBC/M target response/vulnerability and automated target planning for NBC/M facilities	11, 2, 3, 5	DSWA	5.475	603160D
• Counterproliferation ACTDs	• Integrated operational testing to support early deployment of new counterforce capabilities against NBC/M and underground targets	2, 3, 11, 8	DSWA EUCOM	10.579	603160D
• Cooperative Army/Navy Hard Target Missile System	• Development of an earth penetrating variant of the Army's Tactical Missile System	3	Army Navy	—*	
Strongly Related CP Programs					
• Hard and/or Deeply Buried Target Defeat Capability	• Joint Service evaluation and development of hard and deeply buried target defeat capabilities	3, 2, 8, 11, 5	Services DSWA OSD DIA	9.968	603311F 604327F 604327N
• Air Force Agent Defeat Weapon Program	• Develop capabilities and munitions to defeat or neutralize BW/CW agents and their delivery systems	2, 4, 12, 11	Air Force	0.500	604222F
• DSWA Hard Target Defeat Program	• End-to-end evaluation and development of improved tactics and technologies for hard target characterization and defeat	3, 2, 11	DSWA	13.202	602715H
• DSWA Weapons Systems Lethality Program	• Evaluation of conventional weapon lethality and effects and collateral effects assessment; maintain core competency in nuclear weapons effects	2, 3, 5, 11	DSWA	18.807	602715H
• DARPA Surveillance Sensor and Exploitation Systems Program	• Develop sensors to defeat camouflage, concealment, and deception practices and provide near real-time semi-automated exploitation of wide area imagery to track critical mobile targets	12, 8, 2, 3	DARPA	81.600	603762E
• DARPA Information Integration Systems Program	• Integrated, all-source, geographically referenced battlefield knowledge base and information distribution system development for enhanced real-time situation assessment and intelligence dissemination	12, 8, 2, 3	DARPA	96.424	603760E

* FY 1998 funding for this project has not been determined.

DARPA's Semi-Automated Imagery Processing (SAIP) ACTD currently under way and demonstrating the use of U-2 aircraft imagery on the enhanced tactical radar correlator; and iv) initial development of the next generation of model-based ATR systems addressing target articulation and obscuration. Additional project details are provided in Table 5.6 and in Appendix C (Table C.7).

DARPA Information Integration Systems Program. This program supports efforts to enhance real-time situation assessments by developing an integrated, all-source, geographically referenced battlefield knowledge base and information distribution system. It supports improved capabilities to detect, identify, and track high value, time critical fixed and mobile targets, including NBC-armed missile launchers and NBC/M support facilities. Key accomplishments include: i) completed integration of a single intelligence source correlator; ii) demonstration of the functionality of a global broadcast service and information servers for rapid dissemination of imagery products; iii) demonstration of the operational utility of disseminating intelligence products (imagery and UAV video) and one way video teleconferencing of commanders' intent; and iv) completion of nine independent correlation systems using open systems architectures. Additional project details are provided in Table 5.6 and in Appendix C (Table C.7).

5.5.5 Near-, Mid-, and Long-Term Milestones for DoD NBC/M Counterforce Programs. Figure 5.4 summarizes the time-phased milestones of those NBC/M counterforce programs discussed above and having clearly identifiable acquisition milestones. With the

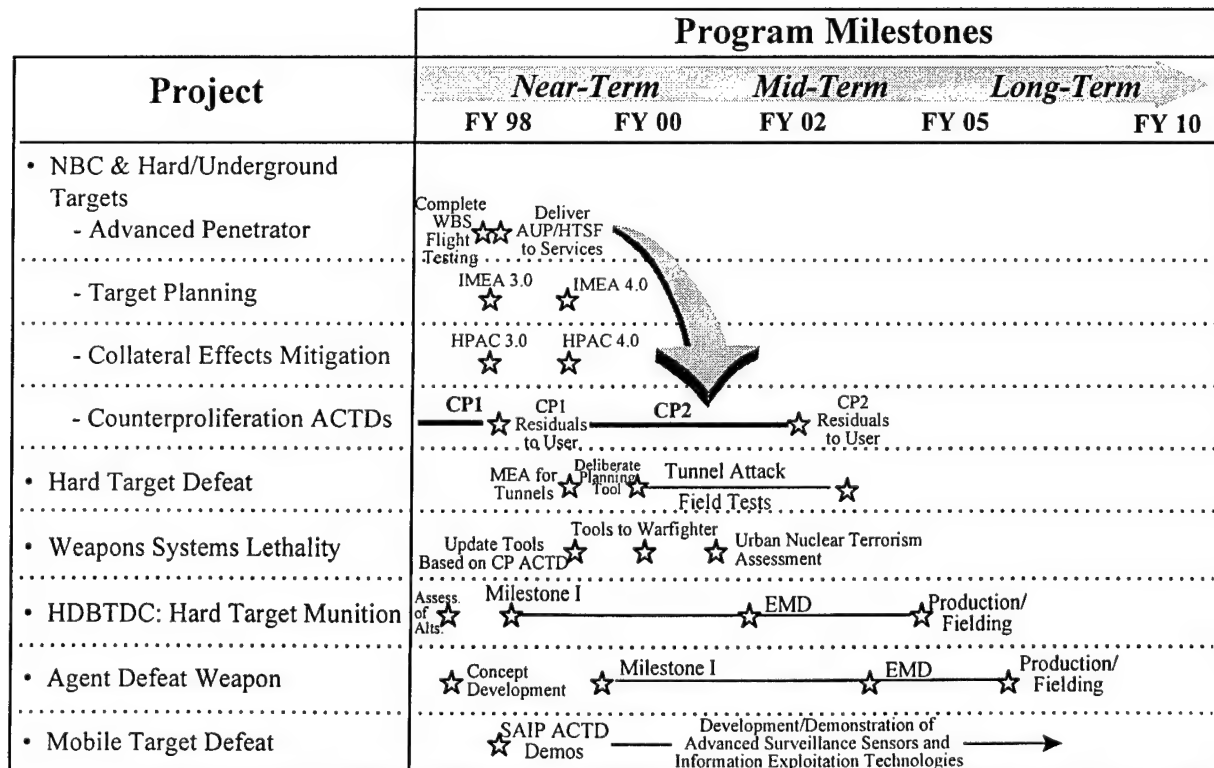


Figure 5.4 Time-Phased Milestones of NBC/M Counterforce Programs

completion of the Counterforce CP2 ACTD considerable capability enhancements will be in place for defeating hard, underground, and NBC/M targets. Furthermore, early in the next century a whole new generation of mobile target defeat technologies will be reaching fruition.

5.6 Status and Accomplishments of DoD Active Defense Programs

5.6.1 Relevant Counterproliferation ACEs and DoD Policy Perspectives. Active defense makes an important contribution to counterproliferation by protecting U.S., allied and coalition forces, and noncombatants from NBC weapons by intercepting and destroying ballistic missiles, cruise missiles, and aircraft armed with NBC weapons in flight and before they can reach friends and allies. Active defense, particularly theater ballistic missile defense (TBMD) (DoD ACE priority 4) and cruise missile defense (DoD ACE priority 7), continues to be a top DoD counterproliferation-related priority.

DoD's theater missile defense (TMD) approach is to build on present air and missile defense systems to provide a near-term defense, and then develop capabilities to intercept enemy air and missile systems at higher altitudes and longer ranges to keep NBC weapons even farther away from U.S. and allied forces. Since threat missile systems differ in their characteristics and capabilities, no single defensive system can counter them with sufficient effectiveness or with the high confidence required for defense against NBC weapons. This is why DoD is developing a "family of systems". DoD's policy is first to upgrade and develop systems that will provide defense for theater forces. The first systems receiving attention are systems that are already fielded, specifically the Marine Corps Hawk system and the Army's PATRIOT system, both of which are undergoing upgrades that will increase their TMD capabilities. BMDO is managing the development of a set of "core" active defense programs that will provide additional capabilities. In addition to follow-on upgrades of the PATRIOT system, BMDO is leveraging the technologies of the Navy's AEGIS and Standard Missile (SM) systems to give them endoatmospheric missile intercept capabilities in the near term and exoatmospheric capabilities in the far term. BMDO and the Army are also developing an exo-/endo-atmospheric interceptor and kill vehicle. Joining these core programs is the Air Force's Airborne Laser (ABL) system which will push the kill zone and the potential of associated NBC collateral effects even further away from friendly forces by intercepting theater ballistic missiles in their boost phase. Effective boost phase defense, where intercept occurs early in flight over the launching country, serves as a powerful deterrent to NBC/M use.

Underlying all of these efforts are programs to develop the corresponding battle management/command, control, communications, computers, and intelligence (BMC4I) capabilities necessary to achieve an effective defense with Joint Service interoperability. BMDO also participates in several international programs to help allies develop TMD capabilities and to learn from what they accomplish, with the aim that these systems, when fielded, will be interoperable with U.S. systems. BMDO and DARPA programs are continuing to develop advanced technologies to enhance future active defense systems. BMDO also manages the National Missile Defense (NMD) program for U.S. homeland defense.

5.6.2 New DoD Initiatives in Active Defense. Since the last CPRC report was issued, DoD has undertaken a number of initiatives in the active defense area to move some of the core systems closer to deployment and meet the highly aggressive schedule requirements necessary to provide enhanced active defense capabilities against emerging threats. In the FY 1998 budget request, DoD has shifted procurement funds for the Hawk, PATRIOT Advanced Capability (PAC)-3, and the Navy Area TBMD system to the Services over the course of the FYDP. Recently, USD(A&T) gave BMDO and the Navy authority for the Navy Area TBMD system to proceed to the Engineering and Manufacturing Development (EMD) phase of the acquisition process. The Navy Theater Wide (NTW) TBMD system has been designated as a pre-Major Defense Acquisition Program (MDAP). Current operational capabilities against theater ballistic missile threats have been improved by delivering upgrades to the PATRIOT system and improved BMC4I systems to the CINCs, as well as making TMD a vital part of military exercises.

The Joint Theater Air and Missile Defense Organization (JTAMDO). Perhaps the most significant new initiative has been the formation of the JTAMDO, established in November 1996 by the Vice Chairman of the JCS and USD(A&T) to develop and coordinate Joint theater air and missile defense requirements and efforts, including those for ballistic and cruise missile defenses. The JTAMDO is the single organization within DoD responsible for Joint integrated theater air and missile defense requirements, operational concepts, and architectures. The JTAMDO will coordinate TMD activities with the CINCs and Services, and in the words of Rear Admiral Richard West, BMDO Deputy Director, JTAMDO will “do the operator’s side of the house, to create the operational requirements and the operational architecture . . . necessary to meet the requirement.” BMDO serves as the integration systems architect, with the responsibility of translating JTAMDO-developed requirements into systems architectures, and as the lead R&D and acquisition agency. Additional details are provided in Table 5.7 and in Appendix C (Table C.13).

5.6.3 Counterproliferation Support Program Projects in Active Defense. The Counterproliferation Support Program currently has no projects in the area of active defense.

5.6.4 Active Defense Programs Strongly Related to Counterproliferation. BMDO, Service, and DARPA programs are addressing counterproliferation ACEs in active defense. These programs are described below.

BMDO Programs. BMDO is currently managing several TMD programs, including: i) continuing the development of upgrades to the Army’s PATRIOT PAC-3 system and the Navy’s Area TBMD system; ii) developing and testing the Army’s Theater High Altitude Area Defense System (THAAD); iv) developing the NTW TBMD system; v) conducting Joint Service theater missile defense Demonstration and Validation (Dem/Val) and Program Definition and Risk Reduction acquisition activities; vi) cooperating in international missile defense development programs like the joint U.S.-European Medium Extended Air Defense System (MEADS) and Israel’s Arrow program; vii) developing advanced technologies and supporting innovative science and technology development for missile defense applications; and viii) conducting studies and analyses exploring the offense/defense synergies of counterforce operations against mobile missile systems. BMDO is also managing the development of a National Missile Defense and its supporting technologies.

The first of BMDO's core programs for near-term deployment is the *Army PAC-3 system* which is being developed in several configurations. Configuration 2 features major software upgrades to the radar, giving it greater tracking capability, and improvements to communications links. Two of nine PATRIOT batteries have already been equipped with this upgraded system. PAC-3 (Configuration 3) will build on the previous configurations with a more capable hit-to-kill missile and substantial upgrades to its ground radar. The PAC-3 missile will begin low-rate initial production (LRIP) in FY 1998 and be fielded in late FY 1999. The second of the lower-tier systems is the *Navy Area TBMD system*. This program builds on the national investment in AEGIS ships and weapon systems and the Navy SM-2 Block IV missiles now being used for air defense. With software upgrades to the SPY-1 radar, coupled with improved kinematics and fuzing for the SM-2 missile and a blast-fragmentation warhead, this system will be capable of ballistic missile intercepts. With this system, the Navy can bring a TMD capability into a theater without having to deploy forces on land. It will be particularly useful in providing NBC/M protection to debarkation ports, coastal airfields, amphibious objective areas, allied forces ashore, and other high value sites. BMDO plans to field a User Operational Evaluation System (UOES) in FY 1999 with first unit equipped (FUE) in 2001.

The higher altitude or upper-tier portion of the family of systems for active defense features Army and Navy programs that are still in the Dem/Val or Program Definition and Risk Reduction phase of the acquisition cycle and are not due for deployment until after the year 2000. The *Army's Theater High Altitude Area Defense System* will provide an exo-/endo-atmospheric intercept capability that will make it possible to protect broad areas, dispersed assets, and population centers against theater ballistic missiles. Of the many components of this system, the THAAD radar (formerly known as the Ground Based Radar) is a key factor. It is based on state-of-the-art, solid-state, X-band radar technology, and will be interoperable with both existing and future air and missile defense systems. The THAAD interceptor is a single stage booster and kinetic kill vehicle that destroys its targets by colliding with them in a "hit-to-kill" mode. THAAD's BMC4I system will manage and integrate all THAAD components. Seven THAAD flight tests have been conducted since 1995, and, while a successful intercept has not yet been achieved, these tests have been important in integrating the THAAD radar as the system's primary sensor and in developing the overall system for operational deployment. A THAAD UOES prototype (excluding missiles) is currently available for early operational assessment, enabling soldiers to influence the final system design. The current plan calls for making the THAAD UOES prototype available in 1999 for limited use as a contingency capability during a national emergency. FUE (i.e., one battery with an upload of missiles) could occur as early as FY 2005. However, the acquisition status of the THAAD program is being reviewed by USD(A&T).

The *Navy Theater Wide TBMD system* is an upper-tier exoatmospheric active defense system which leverages the Navy Area TBMD program, the AEGIS Weapons System, Standard Missile, and Vertical Launch System. However, the capabilities of all these systems will be upgraded, especially the range and lethality of the Standard Missile, to achieve a depth of fire and defense that can span an entire theater wide region without the need for land bases. It will be capable of intercepting threat missiles in their ascent phase, at apogee, or during descent. Coupled with the lower tier systems, like PAC-3 and the Navy Area TBMD system, the upper tier systems will make possible a layered defense which will significantly improve capabilities to protect friendly forces and allied populations against NBC/M threats. The main objectives of the Navy

Theater Wide TBMD program are to increase the range of the system by adding a third stage to the SM-2, Block IVA missiles and to test and integrate a hit-to-kill interceptor. Several potential interceptors, now involved in concept exploration and technology demonstrations, are under consideration, including the Lightweight Exo-Atmospheric Projectile (LEAP). The first LEAP flight test is scheduled for 1999 and the first intercept test is slated for 2000. The program would then transition to EMD followed by UOES, although no firm dates have been set for these milestones.

The U.S. government has entered into an international cooperative program with Germany and Italy to develop the *Medium Extended Air Defense System*. This system will fill a critical void in the current force structure by providing organic air defenses to land maneuver forces against short and medium range theater ballistic missiles, cruise missiles, UAVs, and fixed and rotary wing aircraft. Additionally, the MEADS netted distributed BMC4I system ensures interoperability in support of Joint and combined operations. Through its Joint TMD program, BMDO is cooperating with the Israeli government in the development of their *Arrow National Defense System*. Much useful data have already been gleaned from a recent series of successful Arrow flight tests. BMDO is also funding the Boost Phase Intercept program in cooperation with Israel to explore the use of armed UAVs to intercept theater ballistic missiles during their ascent phase.

All of the systems discussed above are designed to intercept NBC-armed air and missile systems after they have been launched, but it may be more effective and cheaper to conduct counterforce operations (also referred to as "attack operations" in a TMD context; see Joint Publication 3-01.5, *Doctrine for Joint Theater Missile Defense*, February 1996) against enemy tactical systems supporting launch operations, including mobile launch systems, before the aircraft or missiles can be launched. Counterforce operations offer synergies with defensive operations, further enhancing capabilities to protect U.S. and allied forces. In coordination with the Services, BMDO continues to monitor and sponsor studies and experiments that examine the effectiveness and cost trade-offs between active defense against theater ballistic missiles in flight and counterforce operations against NBC/M delivery systems, like mobile missile launchers (including those deployed in hide sites or in deep underground or hardened shelters).

While these core systems are aimed at countering NBC/M threats in a theater, DoD is also concerned about defending the U.S. homeland from these weapons and their associated delivery systems, and has directed BMDO to manage the *National Missile Defense* program. While NMD was once a technology development effort, it has now been elevated to a deployment readiness program and designated as a major defense acquisition program. Over the next few years, components of an NMD system will be flight tested at the national test range in the Pacific, to include an intercept test of the kill vehicle in FY 1998. The program is designed to enable development of the system in three years and, should the threat warrant it, deploy elements of the system in an additional three years. If deployed, the system will be composed of ground-based interceptors and a ground-based radar along with forward-based early warning radars.

Key BMDO accomplishments since last year's report include several successful live fire tests in which interceptor missiles successfully engaged their targets. These tests include: i) a PATRIOT PAC-3 (Configuration 2) system with Guidance Enhanced Missiles successfully

shooting down a SCUD missile, an event that also included a successful integration test of the THAAD and AEGIS radars, the Airborne Surveillance Testbed, and the Cobra Judy radar; ii) demonstration of Navy Area TBMD SM-2 Block IV missile IR seeker and blast-fragmentation warhead functionality by intercepting a Lance ballistic missile target; and iii) three successful intercepts for the Israeli Arrow program. Other successful tests which did not involve intercepts include: i) the environmental test firing of a SM-2, Block IVA missile which integrated the missile's IR detector dome and radar detectors and tested the dome's operation at various flight temperatures; ii) a TMD Critical Measurements Program test with a Castor IVB booster that carried and then released a crude maneuvering reentry vehicle and penetration aids along with a fly-away sensor that collected signature data on these objects; and iii) releasing a Request for Proposals for a lead NMD systems integrator and drafting an Integrated Deployment Plan for NMD. Additional project details are provided in Table 5.7 below and in Appendix C (Table C.6).

Army PATRIOT PAC-3 RDT&E and Procurement. Procurement of PATRIOT PAC-3 upgrades transitions to the Army in FY 1998. The PAC-3 system is being modified with the Guidance Enhanced Missile upgrade, and software and hardware improvements will give the system enhanced capabilities against both ballistic and cruise missiles. In FY 1998, 52 PAC-3 missiles, 11 PAC-3 launch stations, and 6 radar station modification kits will be procured. In a recent flight test, a PAC-3 system with Guidance Enhanced Missiles shot down a SCUD target missile. RDT&E activities are under way to support development of the Remote Launch Communications Enhancement System, threat simulations, and P3I system testing. Additional project details are provided in Table 5.7 and in Appendix C (Table C.3).

Army Missile Defense Systems Integration and TMD BMC4I Procurement Programs. This program funds systems analysis, studies, and experimentation designed to validate and integrate the four key functions of TMD: active defense, passive defense, counterforce operations, and BMC4I. This Dem/Val and systems integration program develops hardware and software components, doctrinal and procedural solutions, subsystem interface controls, and systems architectures. This program supports the joint U.S./Israeli Nautilus/Tactical High Energy Laser (THEL) ACTD evaluating the effectiveness of high energy lasers to defeat threats posed by Katyusha and similar short range artillery rockets. Completion of the THEL integration and testing demonstration is scheduled for FY 1998. This program also supports the U.S. Army Space and Strategic Defense Command's Missile Defense Battle Integration Center (MDBIC) which is building a flexible linked architecture of pre-existing live, virtual, and constructive simulations in a distributed interactive simulation (DIS)-based architecture to support training, exercises, advanced concepts and requirements development, and military operations associated with TMD, NMD, and space operations. The Army is also providing critical BMC4I systems for TMD, including Joint Tactical Information Distribution System (JTIDS) terminals to ensure multiple platform interoperability. Additional project details are provided in Table 5.7 and in Appendix C (Table C.3).

Navy Active Defense Programs. In February 1997 procurement responsibilities for the Marine Corps Hawk and the Navy Area TBMD programs were transferred from BMDO to the Navy. In January 1997, the Navy Area TBMD system achieved its first intercept of a theater ballistic missile with its modified SM-2 Block IV interceptor. The Navy Area TBMD program was subsequently approved to proceed to EMD by the Defense Acquisition Board (DAB). The

NTW Flight Demonstration/AEGIS Leap Intercept Program is scheduled to be reviewed by OSD in April 1997 to determine its appropriate acquisition cycle status. Additional project details are provided in Table 5.7 and in Appendix C (Table C.4).

Marine Corps Hawk Program. The Hawk program declared IOC in the first quarter of 1997. The Hawk system is being upgraded by modifying its TPS-59 radar to improve its effectiveness. The radar completed operational test and evaluation in FY 1996 and initial modification kit production will begin in FY 1997. Kit installation will begin in FY 1998 and be completed in FY 1999. During the same period, improvements will also be made to the Hawk missile to increase its lethality. Key program accomplishments include a series of five successful flight tests in which Hawk missiles engaged and destroyed Lance ballistic missile targets. Additional project details are provided in Table 5.7 and in Appendix C (Table C.4).

The Air Force Airborne Laser Program. The Air Force is developing a Boeing 747 aircraft based high power laser to intercept ballistic missiles in their boost phase. The ABL combines demonstrated state-of-the-art laser, adaptive optics, beam control, and BMC4I technologies into a forward deployed long range TMD boost phase defense platform with "speed of light response" that complements other active defense systems. The program is a legacy of the Airborne Laser Laboratory of the early 1980s and builds on the advancements in laser and optical system technology achieved over the past 15 years. The program has entered the Program Definition and Risk Reduction phase of the acquisition process, and a \$1.1 billion contract was recently awarded to a contractor team to initiate ABL system Dem/Val. A prototype system is under development to demonstrate boost phase defense against theater ballistic missiles in FY 2002. Potential adjunct missions, such as cruise missile defense and air defense of high value airborne assets, are also being analyzed. The goal is to begin fielding the first of seven planned ABL systems in FY 2005 with full operational capability achieved in FY 2008. Key program accomplishments include: i) completion of active missile tracking demonstrations at White Sands Missile Range; ii) demonstration of required laser power levels and chemical efficiency in full scale tests; iii) demonstration of beam control functionality and a multi-beam illuminator concept; and iv) completion of in-flight 747 aircraft vibration tests and wind tunnel tests of the beam director turret. Additional project details are provided in Table 5.7 and in Appendix C (Table C.5).

Air Force Theater Missile Defense (R&D) Program. This program is working to improve the ability to detect, locate, identify, and destroy (or otherwise neutralize) an enemy's theater missile capability and its supporting infrastructure elements in all phases of theater conflict. It defines improvements to existing BMC4I and counterforce capabilities, develops and evaluates prototype systems, demonstrates modifications during operational concept demonstrations, and coordinates transfer of improvements to operational systems. Key accomplishments include: i) demonstration of data Link-16 range extension and integration of the Link-16 TMD message set on the Airborne Warning and Control System (AWACS) aircraft; ii) development of a methodology for conducting Intelligence Preparation of the Battlespace (IPB), including automated application of the methodology; iii) completion of country studies as part of the IPB process; iv) development of planning tools to assist in deployment of air and missile defense systems and a targeting decision aid for time critical targets; and v) completion of an expert

Table 5.7: Key DoD Counterproliferation Programs in Active Defense

Program/Project Title	Project Description	DoD ACE	Agency	FY 98 Budget [\$M]	PE No.
Strongly Related CP Programs					
• JTAMDO Support	• Planning, coordination, and oversight of Joint integrated theater air and missile defense requirements, operational concepts, and architecture development	4, 7	Joint Staff	23.100	605126J
• BMDO Programs*	• PATRIOT PAC-3 EMD • Navy Area TBMD System EMD • THAAD System Dem/Val • THAAD System EMD • Navy Theater Wide TBMD System Dem/Val • MEADS Dem/Val • Joint TMD Dem/Val • National Missile Defense Dem/Val • Boost Phase Intercept Dem/Val • Support Technology Applied Research • Support Technology Advanced Concept Devel.	4, 7	BMDO	206.057 267.822 294.647 261.480 194.898 47.956 542.619 504.091 12.885 101.932 147.557	604865C 604867C 603861C 604861C 603868C 603869C 603872C 603871C 603870C 602173C 603173C
• PATRIOT PAC-3 Procurement	• Procurement of PATRIOT PAC-3 system/missile	4, 7	Army	349.100	procurement
• Army PATRIOT PAC-3 RDT&E	• Development of the Remote Launch Communications Enhancement Unit, threat simulations, and P3I testing	4, 7	Army	12.388	203801A
• Army Missile Defense Systems Integration: Dem/Val	• Dem/Val and integration of critical TMD systems • Support joint U.S./Israeli Nautilus/THEL ACTD	4, 7	Army	24.138	603308A
• Army TMD BMC4I Procurement	• Provide JTIDS terminals for platform interoperability in support of TMD	4, 7	Army	20.100	208864C
• Navy Active Defense Programs	• Procurement of the Navy Area TBMD System	4, 7	Navy	15.400	procurement
• Marine Corps Hawk Program	• Procurement of the Hawk Air Defense System	4, 7	Navy	3.475	procurement
• Air Force Airborne Laser Program	• Integration of laser, optical, tracking, and related BMC4I systems into ABL aircraft for demonstration of ballistic missile boost phase defense	4, 7	Air Force	157.136	603319F
• Air Force Theater Missile Defense (R&D) Program	• R&D integration to improve BMC4I and counter-force operations to defeat theater missile capabilities and their supporting infrastructure elements	4, 12, 8, 7	Air Force	29.182	208060F
• Air Force Space Sensor and Satellite Communication Tech.	• Surveillance sensor and threat warning technology RDT&E in support of TMD and NMD	4, 7	Air Force	1.498	603401F
• DARPA Air Defense Initiative	• Technology R&D for low cost defenses against cruise missiles, theater ballistic missiles, and UAVs and for air-directed defense architectures	7, 4	DARPA	18.100	603762E

* See Appendix C, Table C.6, for additional details.

missile tracker prototype. Additional project details are provided in Table 5.7 and in Appendix C (Table C.5).

Air Force Space Sensor and Satellite Communication Technology Program. This program is developing surveillance sensor and threat warning technologies required to support TMD and NMD. Key accomplishments include: i) fabrication and characterization of the first large format (256 x 256 element arsenic-doped silicon) array for IR space sensor applications; ii) demonstration of a two color focal plane array; and iii) fabrication of an IR camera testbed capable

of testing large staring arrays. Additional project details are provided in Table 5.7 and in Appendix C (Table C.5).

DARPA Air Defense Initiative. In its Air Defense Initiative, DARPA is pursuing three projects which will provide defense against NBC-armed cruise missiles, theater ballistic missiles, and UAVs. These are the Mountain Top Program, the Low Cost Cruise Missile Defense Program, and the Air-Directed Surface-to-Air Missile Architecture. Key accomplishments include: i) demonstration of Mountain Top surveillance radar technology and transfer of the radar to the Navy for further development; ii) initiation of three low cost cruise missile defense studies; and iii) testing of fieldable space-time adaptable radar processing algorithms which allow rejection of jamming signals and false ground echos. Additional project details are provided in Table 5.7 and in Appendix C (Table C.7).

5.6.5 Near-, Mid-, and Long-Term Milestones for DoD Active Defense Programs.

Figure 5.5 summarizes the time-phased milestones of those active defense programs discussed above and having clearly identifiable acquisition milestones. As born out in the figure, starting with PATRIOT PAC-3 FUE in 1999, significant upgrades in active defense capabilities will occur over the next five to seven years.

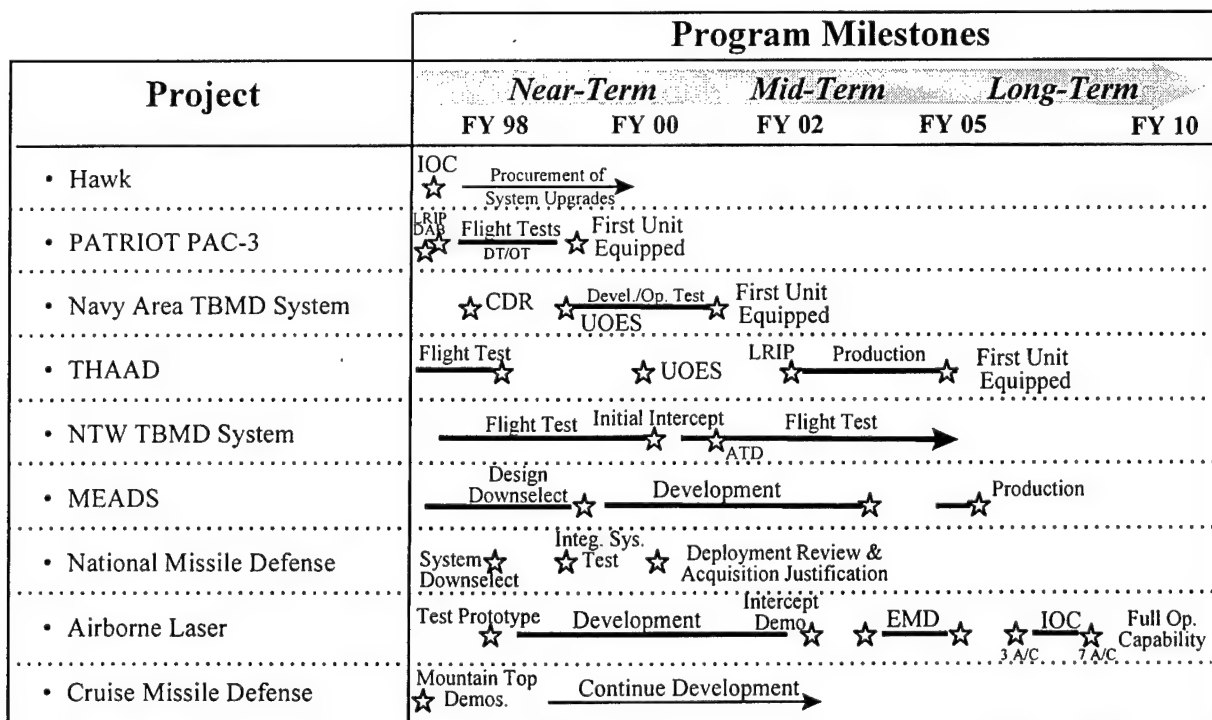


Figure 5.5 Time-Phased Milestones of Active Defense Programs

5.7 Status and Accomplishments of DoD Passive Defense Programs

5.7.1 Relevant Counterproliferation ACEs and DoD Policy Perspectives. DoD supports an extensive NBC passive defense infrastructure to enable U.S. military forces to survive, fight, and win in NBC contaminated environments. An integrated, balanced program is essential to achieve this objective. The Chemical and Biological Defense (CBD) Program oversees and coordinates all DoD efforts in passive defense. U.S. forces must have aggressive, realistic training and defensive equipment that allows them to avoid contamination, and, where contamination cannot be avoided, they must be able to protect themselves, decontaminate, and sustain operations throughout the battlespace environment. They must also have the capability to provide effective medical casualty treatment and management. To address these needs, DoD is supporting R&D and acquisition programs developing: i) systems to detect, identify, characterize, and provide warning of CW/BW agents (DoD ACE priorities 1 and 9); ii) individual and collective protection gear (DoD ACE priority 9); iii) methods to advance the speed and efficiency of CW/BW agent decontamination (DoD ACE priority 9); and iv) a broad array of CW/BW medical defense RDT&E and casualty management and treatment activities (DoD ACE priority 9). In addition to these efforts, DoD is pursuing, through the CBD Program, efforts to increase its BW vaccine production capacity, stockpile vaccine supplies, and develop a broader spectrum of new and improved BW vaccines and other medical countermeasures for CW/BW agents (DoD ACE priorities 10 and 9). In cooperation with the CBD Program, the Counterproliferation Support Program is continuing to leverage ongoing CBD programs to accelerate the fielding of critical systems and technologies in BW detection and early warning.

5.7.2 New DoD Initiatives in Passive Defense. To expedite the fielding and improve the capabilities of BW agent detection and warning, one ACTD is under way, another is under development, and a new developmental BW detection system is being designed. They are summarized below.

The Air Base/Port Bio Detection ACTD. The purpose of this ACTD is to expedite the fielding of an interim capability to provide rapid automated BW attack detection and warning to high value fixed sites such as ports and airfields. The ACTD is managed by the JPO-BD in conjunction with the CBD Program and sponsored by the CINCs of the U.S. Central Command (CENTCOM) and USPACOM. The BW agent detection system will be based on the Navy's deployed Interim Biological Agent Detection (IBAD) system supplemented with modules for detecting generic biological material, location reporting, and measuring meteorological conditions. In addition to the IBAD-based BW detection system, the following residuals or "leave behinds" will be provided to the CINCs: i) an integrated command and control system (involving prototype JWARN components) to assist base personnel in the rapid assessment, warning, and dissemination of BW attack data; ii) oral-nasal respirators providing protection from re-aerosolized BW agents without the stresses associated with full face protective masks; iii) decision aids and procedures for site decontamination; and iv) procedures for determining when it is safe to remove protective gear. With this system, warning of a possible BW attack can be transmitted to a central command post in about 10 minutes after the initial detection. Testing of a small scale detector network prototype is under way and full scale testing of a complete network and other residual equipment will be completed this Summer. Full scale deployment of ACTD products to CENTCOM and PACOM will begin in FY 1998.

The Joint Biological Remote Early Warning System (JBREWS) ACTD. This ACTD is designed to expedite the fielding of BW battlefield and fixed site detection and early warning systems and develop doctrine and tactics for their use. The ACTD effort is being managed by the JPO-BD with oversight provided by the DATSD(NCB)(CP). CINC sponsors are CINC EUCOM and CINC CENTCOM. Other key participants include the Army's Chemical and Biological Defense Command (CBDCOM), DARPA, DOE, and the Naval Research Laboratory. By using remote BW detection systems, the JBREWS concept will enable improved warning and more timely dissemination of BW threat data to U.S. forces. Man emplaced, UAV-based, and artillery delivered sensor and support systems will be evaluated as will active laser detection systems. A draft Management Plan and baseline cost estimate have been completed, and a JBREWS ACTD systems study is under way. ACTD field demonstrations with the CINCs will commence in FY 2000, along with EMD transition. System element production is scheduled to start in FY 2003.

The Joint Biological Point Detection System (JBPDS). JBPDS is the developmental system that will replace existing and deployed BW detection systems, like the Biological Integrated Detection System (BIDS), IBAD, and the Air Base/Port ACTD interim detector systems. It will provide BW agent detection capabilities for all the Services and throughout the battlespace. The BW detection suite will consist of four functional elements: i) the trigger for real-time detection of significant changes in ambient aerosol levels; ii) the collector for BW sample collection to enable more detailed analysis; iii) the detector for broad characterization of sampled biological material (e.g., bacteria, spore, protein, etc.); and iv) the identifier for identification of suspected BW agents. JBPDS integrates these functionalities into an automated system providing Joint Service interoperability. This Joint Service acquisition program is managed by the JPO-BD in conjunction with the CBD Program. An EMD contract will be awarded in FY 1997, and production is scheduled to start in FY 2000, with FUE scheduled for FY 2001.

5.7.3 Counterproliferation Support Program Projects in Passive Defense. The Counterproliferation Support Program is focusing its passive defense activities on developing and deploying standoff BW detection and early warning capabilities, including conducting the JBREWS ACTD. The Counterproliferation Support Program is also developing and integrating advanced technologies in support of the prototype NBC Joint Warning and Reporting Network (JWARN). The Air Base/Port Bio Detection ACTD is being used as a vehicle to expedite JWARN development. The Counterproliferation Support Program continues to support the accelerated fielding of both an advanced eye safe infrared (IR) lidar (i.e., an improved Long Range Biological Standoff Detection System, LR-BSDS) to provide long range battlefield detection of aerosol clouds indicative of BW use and the ultraviolet violet (UV) lidar system (i.e., the Short Range Biological Standoff Detection System, SR-BSDS) for standoff discrimination of BW (versus non-BW) agents. Two prototype LR-BSDS units will be fielded by September 1997. The SR-BSDS transitions to the JBREWS ACTD in FY 1998 as a candidate technology for evaluation. The Counterproliferation Support Program is also continuing the development of technologies to support near-term fielding of advanced BW agent detection, including fiber optic wave guide (FOWG) biosensors, mass spectrometers, flow cytometers, and detectors employing multispectral UV fluorescence spectroscopy.

Key accomplishments since last year's report include: i) receiving the commitment of CINC EUCOM and CINC CENTCOM to support the JBREWS ACTD and preparation of a draft ACTD management plan and cost estimate; ii) delivery of 30 JWARN prototype systems to USEUCOM; iii) demonstrating JWARN and Air Base/Port Bio Detection ACTD integration; iv) restructuring the eye safe LR-BSDS program and system design to compensate for reduced funding, demonstrating full laser power, and fabricating 2 prototype systems; v) completion of a system design review for the SR-BSDS prototype and initiation of component field testing; vi) successful testing of micro UV laser fluorescence biosensors at Joint Field Trials III; vii) fielding of portable, ruggedized prototype FOWG biosensors for use by the Chemical Biological Incident Response Force (CBIRF) and SOF; and viii) conducting biological background and interferent sampling at several field sites to improve BW agent detection capabilities. Additional details of the Counterproliferation Support Program passive defense projects are provided in Table 5.8 below and in Appendix C (Table C.1).

5.7.4 DoD's Chemical and Biological Defense Program. All DoD chemical and biological defense programs are coordinated and integrated within a single office in OSD, consistent with the requirements of 50 U.S. Code, Section 1522. The ATSD(NCB) is the designated focal point within OSD for the CBD Program. This has been a critical tool for ensuring the elimination of redundant programs, focusing funds on program priorities, and enhancing readiness. To date, there has been a consolidation of funding for R&D and initial procurement programs for CW/BW defense (along with some nuclear/radiological passive defense programs). O&M accounts remain with the Services. Significant progress has been made in the development of Joint training, doctrine development, and requirements generation. Modernization and technology plans have been developed which should begin to show savings and true integration of efforts among the Services. Detailed descriptions of the management, plans, accomplishments, and systems under the CBD Program can be found in its latest annual report to Congress entitled *Department of Defense Nuclear, Biological, and Chemical (NBC) Defense Annual Report to Congress*, published in March 1997.

All R&D and acquisition programs within the CBD Program are structured within six Program Elements (PE) for Basic Research, Applied Research, Advanced Technology Development, Demonstration/Validation (Dem/Val), Engineering and Manufacturing Development (EMD), and management support. Procurement funds have also been consolidated. Highlights of key programs strongly related to counterproliferation within each of these program elements are described below. Additional program details, including FY 1998 budget profiles, are provided in Table 5.8 below and in Appendix C (Table C.2).

CW/BW defenses are conducted within the framework of three principles: i) contamination avoidance, ii) protection, and iii) decontamination. These principles provide the basis for an integrated and balanced CW/BW defense program. Contamination avoidance is the highest priority area and consists of capabilities and procedures to: detect, identify, and warn forces of CW/BW threats; enable commanders to determine the appropriate protective posture to assume; and distribute the necessary information so that U.S. forces can avoid contamination. When contamination cannot be avoided, protection makes it possible to survive, fight, and win in a contaminated environment. Protection consists of three elements: individual protection, collective protection, and medical programs. Finally, decontamination provides critical capabilities to allow

the sustainment of operations in a contaminated environment. This framework is detailed in Joint Publication 3-11, *Joint Doctrine for Nuclear, Biological, and Chemical (NBC) Defense*. Key accomplishments in each commodity area are described in what follows.

Contamination Avoidance. Multiple systems are either under development, in production, or have been fielded for early warning, point detection, and warning and reporting of CW/BW threats. Over the past year, there have been several accomplishments in contamination avoidance R&D and acquisition programs.

Science and Technology Base – Basic Research, Applied Research, and Advanced Technology Development. *Basic Research* efforts include coordination and consolidation of a mass spectrometric study of biomarkers having potential utility in future BW detectors and investigation of techniques for generic detection of microbial toxins. *Applied Research* efforts include: i) evaluation of BW agent local warning detection technologies such as deoxyribonucleic acid (DNA) probes, electrospray mass spectrometry, planar wave guides, flow cytometry, and other advanced technologies to support early warning of BW agents; ii) field testing of a tunable UV laser standoff breadboard prototype detector; and iii) development of technologies and databases for multispectral UV fluorescence detection and discrimination of BW agents in realistic battlespaces containing natural and man-made interferents. *Key Advanced Technology Development* projects include demonstrated technologies in the areas of wide area detection using chemical imaging sensors, low level atmospheric monitoring using a mini Chemical/Biological Mass Spectrometer (CBMS), and small lightweight detectors using ion mobility spectrometry.

Demonstration/Validation. Key programs include: i) the Lightweight Nuclear Biological Chemical Reconnaissance System (LNBCRS), which provides unit field commanders with real-time data that can be used to assess the battlefield for NBC hazards while on the move; ii) the Joint Service Lightweight Standoff Chemical Agent Detector (JSLSCAD), which provides chemical agent detection and mapping for CW agent clouds; and iii) technology evaluation of the Joint Chemical Agent Detector (JCAD) addressing Joint Service CW/BW defense requirements.

Engineering and Manufacturing Development. There are several key programs in EMD that promise to offer greatly improved capabilities in the near term for contamination avoidance. They include: i) JWARN, which automates NBC warning and reporting throughout the battlefield and links digital data into existing C3 systems; ii) the CBMS, which identifies collected CW/BW agents and is a potential component for the BIDS Pre-Planned Product Improvement (P3I) system, and the FOX NBC Reconnaissance System (NBCRS); iii) JCAD, which is developing a combined portable CW monitor and small point CW detector for aircraft, shipboard, and individual soldier applications; iv) the Shipboard Automated Liquid Agent Detector (SALAD) for CW detection; v) the Shipboard Chemical Agent Monitor – Portable (SCAMP); and vi) the Joint Service LNBCRS.

Procurement. The BIDS Phase II P3I system will provide technology insertion from concurrent development efforts to upgrade the Phase I Non-Development Item (NDI) BIDS and make possible the ability to detect eight BW agents, provide increased automation for detecting BW agents, and enable computerized integration of detector outputs. Procurements in FY 1998 also include the Improved Chemical Agent Monitor (ICAM), the Automatic Chemical Agent Alarm (ACADA), FOX NBCRS modifications, the AN/UDR-13 Pocket Radiac (Radiation

Detection, Indication, and Computation) nuclear radiation detector, and the Improved Point Detection System (IPDS) for shipboard use.

Protection. Over the past year, there have been several accomplishments in all phases of R&D and acquisition programs for individual and collective protection.

Science and Technology Base – Exploratory Development. Key tech base efforts to improve protection include: i) investigating enhanced protection technologies for masks; ii) continued integration of advanced mask concepts into 21st century soldier systems; and iii) investigating technologies for a lightweight, extended wear half-face mask for improved BW protection.

Demonstration/Validation. The key Dem/Val project for improving collective protection is the Advanced Integrated Collective Protective System (AICPS) which integrates new NBC filtration technologies with environmental controls and power generation components for tactical and combat systems. AICPS is designed to be integrated into multiple configurations to provide collective protection for a variety of tactical systems.

Engineering and Manufacturing Development. Key EMD projects for improving protection include development of the M45 Aircrew Protective Mask (ACPM) which provides rotary wing air crews with a less burdensome respiratory protection system, the AICPS, the M40 P3I Mask, and the M20 P3I Collective Protection System. One of the major programs to be fielded in the near-term is the Joint Service Lightweight Suit Technology (JSLIST) individual protective garment. JSLIST is a Joint Service effort to field a common chemical protective ensemble (i.e., suit, boots, and gloves) that provides adequate chemical protection, reduced heat stress, full compatibility with all interfacing equipment, longer wear, launderability, a single technical data package and manual, a split issue feature to improve fit and reduce inventory, and flame retardancy. JSLIST promotes commonality and standardization to maximize the effectiveness of resources and eliminate redundancy among the Services.

Procurement. The key protection procurement program for FY 1997 is the fielding of the M40/M42 standard issue NBC protective masks.

Medical Programs. Over the past year, there have been several accomplishments in the development of medical countermeasures against CW/BW agents. Medical countermeasures fall into three basic categories: prophylactic (preventative), therapeutic (post-exposure), and diagnostic. Key accomplishments in prophylactic countermeasures include: i) the continued development of advanced vaccines for anthrax, botulinal toxoids, ricin toxoid, Venezuelan equine encephalitis (VEE), and plague; ii) studies of biological scavengers for nerve agents; and iii) cyanide pretreatments. Key accomplishments in therapeutic countermeasures development include: i) continued development of a reactive topical skin protectant for protection against nerve and mustard agents; ii) development of a nerve agent multichambered auto-injector (to replace the multiple injections currently required); and iii) animal toxicology studies for cyanide pretreatments. The key accomplishment for diagnostic countermeasures is the continued development of a forward deployable diagnostic kit which will allow immediate diagnosis of BW-related casualties in the field.

The Joint Vaccine Acquisition Program. DoD has made significant progress in the acquisition of vaccines and related medical products for BW defense. After Operation Desert Shield/Desert Storm, the Army conducted several studies on different approaches for ensuring an adequate industrial base for the production of vaccines against BW agents. An initial study concluded that a government-owned, contractor-operated facility was the best approach. However, a 1994 cost analysis demonstrated that a dual use contractor-owned, contractor-operated facility was significantly less expensive based on net present value. Industry responses, obtained from a survey and two draft Requests for Proposal (RFP), indicated that industry's main concern focused on receiving the long-term commitment from the U.S. Government necessary to support the scientific efforts required for vaccine licensure by the Food and Drug Administration (FDA). While there may be some deficiency in manufacturing capability for one vaccine, most production requirements can be met with existing facilities. Based on industry responses and government studies, a solid acquisition approach, the Joint Vaccine Acquisition Program (JVAP), was developed. As directed by the Deputy Secretary of Defense, the JVAP will use a prime systems contractor to manage and execute advanced vaccine development, FDA licensure, production, storage, and testing of 18 new BW vaccines that have been discovered through DoD-sponsored research. A final RFP was released for the prime systems contract, and multiple offerors have submitted responsive proposals. The anticipated date of award is June 1997.

An FDA licensed anthrax vaccine is available commercially from the Michigan Biologic Products Institute. Government studies indicate that it confers excellent protective immunity against aerosolized anthrax spores. Production of this vaccine has been ongoing since Operation Desert Shield/Desert Storm, and the DoD-prescribed stockpile level will be completed in FY 1997. Additional efforts are being sponsored by the DoD to obtain the requisite scientific data to support a license amendment request to the FDA for a reduced immunization schedule. Another BW vaccine administered to U.S. forces during Operation Desert Shield/Desert Storm was for botulinum toxoid (pentavalent). This vaccine is not FDA licensed, although it has been used for several decades to protect laboratory workers and has an excellent safety record. Efforts are ongoing to collect data on this vaccine and develop a package demonstrating product safety and efficacy for FDA licensure. After reviewing initial data, an FDA advisory council issued recommendations providing clear direction to DoD and the manufacturer for licensing this vaccine.

Decontamination. Over the past year, there have been several accomplishments in decontamination technology development programs.

Science and Technology Base – Exploratory Development and Advanced Technology Development. Research continues in using enzymatic technology to accomplish CW decontamination. Efforts also focus on developing decontamination approaches for sensitive (e.g., electronic) equipment.

Engineering and Manufacturing Development. The key EMD projects are the Modular Decontamination Systems (MDS) and development of a sorbent decontaminant, which may provide a non-aqueous replacement to the current decontaminant (denoted as DS2) and, by reducing the need for water, considerably reduce the logistics burden associated with current decontamination methods.

Chemical and Biological Defense – Management and Support. The primary program supported within this element is the Joint Chemical/Biological Contact Point and Test Program located at Dugway Proving Ground, Utah. This program provides assessments, laboratory analyses, and field tests on a wide variety of equipment that has been fielded or is in production. These activities provide input to the Services for development of doctrine, policy, training procedures, and feedback into the RDT&E cycle. Accomplishments include six assessments, three field trials, and two laboratory tests evaluating systems performance in a CW environment. Funding is also provided under this program for management support for the overall integration and coordination of the CBD Program. Activities include: Joint Service requirements, training, and doctrine development by the Joint Service Integration Group; Joint Service modernization planning; development of a Joint POM and associated budget; and Joint R&D and acquisition planning by the Joint Service Materiel Group.

The Joint Program Office for Biological Defense. The JPO-BD was established to provide centralized management of specified BW defense acquisition programs. JPO-BD-managed projects include: i) procurement of the BIDS NDI and P3I systems, the LR-BSDS NDI and P3I systems, and the IBAD system; ii) development of the JBPDS and the Air Base/Port Bio Detection ACTD; and iii) the JVAP. The JPO-BD is working with the Counterproliferation Support Program in developing improved capabilities for early warning of BW attack, including development of the eye safe LR-BSDS P3I upgrade, adapting and developing point BW agent detectors for remote/early warning detection applications, and planning and developing the JBREWS ACTD to expedite the fielding of these systems. It is also working with DATSD(NCB)(CP) to develop the 911-BIO ACTD which involves adapting passive defense technologies to BW consequence management applications (see Section 8.3).

CBD Program FY 1998 Procurement Plans. The FY 1998 procurement plan calls for the continued fielding of NBC passive defense equipment along with initial procurement of several improved passive defense systems and components.

Within the *contamination avoidance* mission area a number of procurement activities are planned. Procurement for ICAM, a radically improved version of the already fielded Chemical Agent Monitor, continues under a multi-year contract. Procurement for the ACADA will continue. The ACADA provides, for the first time, a point detection capability to detect blister agents. It also provides improved sensitivity and response time, interference rejection, and a programmable capability for all known CW threat agents. FY 1998 funding continues modifications to the FOX NBCRS, which include added capabilities for standoff CW agent detection and communications links to the digital battlefield. Procurement of the AN/UDR-13 Pocket Radiac, which provides the first ever capability to both detect and indicate prompt and residual radiation doses received by troops, continues in FY 1998. Initial procurement for two new and improved CW detection systems for naval surface ships will continue in FY 1998. The IPDS replaces the older Chemical Agent Point Detection System and provides expanded point detection of CW vapor agents, including blister agents. SALAD provides shipboard detection of liquid CW agents. Funding is also provided to produce 28 BIDS P3I systems in FY 1998 to provide an improved detection and identification capability of BW agents within a theater of operations.

Within the *individual protection* mission area, a number of procurement activities are planned. The M40A1 protective masks procured with FY 1998 funding will allow continued replacement of the aging masks currently in the field. FY 1998 funding also procures additional M41 Protection Assessment Test Systems (PATs) that ensure proper mask fit and functionality. FY 1998 procurement funding initiates the Army purchase of a new aircrew mask, the M45 ACPM. This mask radically improves flight safety and provides full compatibility with night vision goggles and weapon sighting systems while improving aircrew comfort. Funding is provided for continued procurement of the Chemical/Biological Respiratory System which is a new aircrew respiratory system for Navy and Marine Corps tactical rotary wing and land based fixed wing aircraft. Funding for the Joint Service Protective Clothing program continues in FY 1998 and includes full rate production of the JSLIST protective garment, the Explosive Ordnance Disposal (EOD) ensemble, and the Fire Fighting Ensemble (a modified version of JSLIST). Procurement of the Aircrew Eye/Respiratory Protection (AERP) mask, a second generation CW/BW oxygen mask, begins again in FY 1998.

Within the *collective protection* mission area, FY 1998 funding supports continued procurement of the Chemical Biological Protective Shelter (CBPS), a highly mobile, self-contained collective protection system which can provide a contamination-free working area for medical and other selected units.

5.7.5 Other DoD Passive Defense Programs Strongly Related to Counter-proliferation. The CBD Program is the focal point for Joint Service passive defense programs. DARPA BW defense R&D programs and DSWA and Navy acquisition programs in nuclear weapons effects, safety, and survivability also contribute to the counterproliferation ACEs in passive defense. These programs are described below.

DARPA BW Defense Program. As one of the major programs conducted under its Defense Science Office, DARPA is pursuing the demonstration and development of BW defense capabilities. The BW Defense Program is developing advanced point detectors for BW agents and extending its combat informatics program to include BW defense. The DARPA program is developing miniaturized detectors (e.g., on a electronic chip) capable of unattended operation that reduce false alarms to a minimum. The BW Defense combat informatics thrust is developing the capability to deliver information about BW treatment protocols directly to medics in the field and provide BW casualty information to medical and field commands. In addition, DARPA is developing BW medical countermeasures emphasizing multi-agent approaches. Efforts include demonstrating the feasibility of using modified red blood cells to eliminate pathogens from the blood and preliminary exploration of approaches for using stem cells as a vehicle for therapeutic use. Key accomplishments include: i) deposition of BW simulant antibodies on a chip using photolithography and testing of a multiple chip stamping device; ii) development of a medical protocol software tool for BW medical response training and testing of an anthrax version in the COMFEX 96 field exercise; and iii) demonstration of a million-fold reduction of virus in the bloodstream using modified red blood cells. Additional project details are provided in Table 5.8 and in Appendix C (Table C.7).

Under an MoU with ATSD(NCB), DARPA works closely with the Counterproliferation Support Program and the CBD Program in its BW defense efforts. Consistent with the FY 1997 NDAA (Section 228), DARPA's BW Defense Program is not consolidated into the CBD Program but exists instead under separate program elements, and, beginning in FY 1998, it will no longer be incorporated into the CBD Program management and oversight structure.

DSWA Nuclear Survivability Programs. DSWA has two programs to ensure the survivability of weapons systems in a nuclear environment: i) the Test and Simulation Technology Program which provides simulators and simulator technology to validate weapons systems operability in nuclear environments; and ii) the Weapons System Operability Program which provides force survivability assessments against nuclear weapons effects and develops nuclear hardened electronic components for military use. Key accomplishments over the past year for the Test and Simulation Technology Program include: i) demonstration of the technologies and completion of facilities for a new x-ray simulator (known as DECADE) to be located at the Arnold

Table 5.8: Key DoD Counterproliferation Programs in Passive Defense

Program/Project Title	Project Description	DoD ACE	Agency	FY 98 Budget [\$M]	PE No.
CP Support Program					
• JBREWS ACTD	• Accelerate fielding of warfighting capabilities for remote detection, identification, characterization, and early warning of BW agent attacks	1, 9, 8	JPO-BD	17.770	603884BP
• Eye Safe LR-BSDS for BW Detection	• Accelerated deployment of airborne eye safe IR lidars for battlefield BW aerosol detection and track	1, 9	JPO-BD Army	13.744	603884BP
• JWARN Demonstration and Integration	• Demonstrate technology to integrate and communicate NBC hazard information	1, 9	JPO-BD	1.000	603384BP
• BW Detection Advanced Technology Development	• Demonstration and rapid fielding of selected BW man-portable and UAV-integrated detectors for remote detection and characterization of BW agents	1, 9	JPO-BD DARPA NRL	6.845	603384BP
Strongly Related CP Programs					
• Chemical and Biological Defense Program*	• RDT&E and procurement of systems and equipment for NBC agent detection and warning, individual and collective protection, medical response (including vaccine R&D), and decontamination	9, 1, 10	ATSD (NCB) Services JPO-BD	421.335	601384BP 602384BP 603384BP 603884BP 604384BP 605384BP procurement
• BW Joint Vaccine Acquisition Program (part of the CBD Program)	• Advanced Development, Dem/Val, and procurement to meet DoD BW vaccine production and stockpile needs	10	JPO-BD Army	64.502	603384BP 603884BP 604384BP procurement
• DARPA BW Defense Program	• Basic research to develop and demonstrate technologies that will minimize impact of BW agents on future military operations	1, 9	DARPA	61.600	602383E
• DSWA Test and Simulation Technology	• Simulators and simulator technology to validate weapon systems operability in nuclear environments	9	DSWA	20.650	602715H
• DSWA Weapon System Operability Program	• Force survivability assessments against nuclear weapons effects based on test results	9, 11 4, 7	DSWA	7.380	602715H
• Navy Radiac Program	• RDT&E and procurement of radiation detection and monitoring equipment for a variety of applications	9	Navy	3.030	603542N

* See Appendix C, Table C.2 for additional information.

Engineering Development Center; and ii) consolidation of radiation test facilities for more efficient operation. Key accomplishments in the Weapon System Operability Program since last year's report are: i) completion of an operability assessment for U.S. Space Command's (USSPACECOM) tactical warning and attack assessment (TW/AA) system; ii) completion of a quantitative assessment of non-ideal airblast weapons effects for the Army Chemical and Nuclear Agency; iii) development of nuclear hardened high integration density memory chips; and iv) demonstrated hardening of optical imaging electronics at low temperature. Additional project details are provided in Table 5.8 and in Appendix C (Table C.8).

Navy Radiac Program. This program provides RDT&E and procurement for radiation detection and monitoring equipment for Navy and Marine Corps use, including nuclear power, medical safety, weapons safety, radiography, and EOD applications. Key accomplishments include production of the Multifunction Radiac and an EOD dosimeter, initiation of low rate initial production for a laser dosimeter, and transition to EMD for the Underwater Radiac. Additional project details are provided in Table 5.8 and in Appendix C (Table C.4).

5.7.6 Near-, Mid-, and Long-Term Milestones for DoD Passive Defense Programs. Figure 5.6 summarizes the time-phased milestones of those passive defense programs discussed above and having clearly identifiable acquisition milestones. Several key systems across the


Project	Program Milestones				
	Near-Term		Mid-Term	Long-Term	
	FY 98	FY 00	FY 02	FY 05	FY 10
• BW Detection	BIDS NDI IOC ★ IBAD IOC	BIDS P31 IOC ★ ★ CBMS IOC	JBPDS ★ IOC		
• BW Standoff Detection/Warning	LR-BSDS NDI ★ IOC	LR-BSDS Complete ★ FUE ★ JBREWS ACTD		LR-BSDS P31 ★ IOC	
• CW Detection	IPDS ACADA ★ IOC ★ IOC	SALAD IOC ★ ★ ICAM IOC		JSLSCAD ★ IOC	
• Nuclear Radiation Detection	EOD Dosimeter/Mult. Func. Radiac Pocket Radiac ★ FUE ★	Underwater Radiac ★ IOC ★ Laser Dosimetry IOC			
• NBC Reconnaissance		FOX NBCRS Block I ★ IOC	Lightweight NBCRS ★ IOC		
• NBC Warning and Reporting	AB/Port ACTD ★ JWARN	JBREWS ★	JWARN/MICAD ★ IOC		
• Individual Protection	M40/42 ★ Mask & PATS IOC	★ JSLIST IOC ★ M45 Mask IOC			
• Collective Protection	CBPS ★ IOC	AICPS ★ IOC		Adv. Collective Protection ★ System IOC	
• Decontamination	M295 Decon. Kit ★ IOC	MDS ★ IOC		Sorbent Decon. ★ IOC	
• Vaccines for BW Defense	Prime Sys. Contract ★ ★ Anthrax	★ Plague ★ Smallpox ★ Ricin	Vaccine Dem/Val ★ VEE ★ Botulinum	★ VEE/VEE/Plague Combo. ★ Brucellosis	
• Nuclear Survivability					

Figure 5.6 Time-Phased Milestones of Passive Defense Programs

passive defense spectrum will achieve IOC by FY 2000 leading to a significant improvement in passive defense capabilities. An impressive array of BW defense vaccines will also have reached the Dem/Val stage of development.

5.8 Summary of DoD's Counterproliferation Response

Table 5.9 summarizes DoD's response to the counterproliferation ACEs by matching selected activity and program accomplishments to the primary ACE priority they address.

Table 5.9: DoD's Response to the Counterproliferation ACEs

DoD ACE Priority	Selected Accomplishments in DoD Counterproliferation Programs
1. Detection, Identification, and Characterization of BW Agents	<ul style="list-style-type: none"> Activated an Army Company equipped with the Biological Integrated Detection System Interim Biological Agent Detector fielded on selected surface ships deployed to high threat areas Accelerated development of advanced early warning BW agent detection systems, including the LR-BSDS and the JBPDS Continuing the Air Base/Port Bio Detection ACTD and initiation of the JBREWS ACTD
2. Detection, Characterization, and Defeat of NBC/M Facilities with Minimal Collateral Effects	<ul style="list-style-type: none"> Conducted integrated sensor, weapon, and targeting tool field tests for NBC/M and underground facility defeat and collateral effects mitigation as part of the Counterproliferation CP1 ACTD Initiated the follow-on Counterproliferation Counterforce CP2 ACTD Agent defeat weapons system concepts collected from industry and DoD/DOE labs for evaluation
3. Detection, Characterization, and Defeat of Underground Facilities with Minimal Collateral Effects	<ul style="list-style-type: none"> Technical evaluation of hard and deeply buried target defeat/neutralization concepts submitted by industry and the DoD/DOE labs See ACE #2 entries above
4. Theater Ballistic Missile Active Defense	<ul style="list-style-type: none"> Theater ballistic missile defense procurement transitioned to the Services; JTAMDO established Successful flight tests for PATRIOT PAC-3/Guidance Enhanced Missile, Hawk, Navy Area Theater Ballistic Missile Defense, and the Israeli/BMD0 Arrow programs Completed 7 Theater High Altitude Area Defense system flight tests Airborne Laser boost phase defense system entered Program Definition and Risk Reduction phase; contract issued to industry team to initiate system Dem/Val Completed MoU with European partners for MEADS project definition and validation National Missile Defense elevated to deployment readiness program, RFP for lead systems integrator released, and an Integrated Deployment Plan being drafted
5. Support for Special Operations Forces and Defense Against Paramilitary, Covert Delivery, and Terrorist NBC Threats	<ul style="list-style-type: none"> Continued development of specialized technologies and equipment prototypes to assist SOF and Explosive Ordnance Disposal teams in countering CW/BW threats Continued forward deployment of specialized equipment to enhance readiness sustainment Enhanced coordination of Joint Service exercises and readiness sustainment activities Formed organizational structure and initiated facility assessments to enhance U.S. force protection
6. Provide Consequence Management	<ul style="list-style-type: none"> Established the Marine Corps Chemical Biological Incident Response Force Initiated planning and development of the Consequence Management 911-BIO ACTD Integrated consequence management training for state and local First Responders
7. Cruise Missile Defense	<ul style="list-style-type: none"> Demonstration of Mountain Top surveillance radar technology and transfer to the Navy for further development; initiation of low cost cruise missile defense studies Technology sharing and synergy with ballistic missile defense programs
8. Collection, Analysis, and Dissemination of Actionable Intelligence to Counter Proliferation	<ul style="list-style-type: none"> See the Intelligence Annex to this report
9. Robust Passive Defense to Enable Sustained Operations on the NBC Battlefield	<ul style="list-style-type: none"> Continued deployment of critical NBC detection and warning, individual and collective protection, and decontamination systems for use throughout the battlespace Continuing advances in CW/BW medical defense RDT&E
10. BW Vaccine RDT&E and Production to Ensure Stockpile Availability	<ul style="list-style-type: none"> Contract proposals for prime systems contractor being evaluated; award expected in FY 1997 Continued production of anthrax vaccine to meet DoD stockpile needs in FY 1997; screened several BW vaccines for safety and efficacy; extensive vaccine RDT&E activities under way
11. Target Planning for NBC/M Targets	<ul style="list-style-type: none"> User acceptance of integrated target planning and weaponeering tools by CINC USEUCOM for use in Bosnia as part of Operation Joint Endeavor
12. Prompt Mobile Target Detection and Defeat	<ul style="list-style-type: none"> Development of a foliage penetrating radar and other sensors to defeat camouflage, concealment and deception; new capabilities for near real-time exploitation of wide area imagery Target recognition algorithm demonstration as part of DARPA's Semi-Automated Imagery Processing ACTD Demonstrated operational utility of C4I systems for rapid dissemination of intelligence to users
13. Detection, Tracking, and Protection of NBC/M and NBC/M-Related Materials and Components	<ul style="list-style-type: none"> Deployment of prototype Specific Emitter Identification System for identifying ships at sea suspected of transporting NBC/M or related materials; fleet integration under way
14. Support Export Control Activities of the U.S. Government	<ul style="list-style-type: none"> Reviewed over 18,000 export license application for military and dual-use technologies Enhanced the "Wassenaar Arrangement", a new multinational export control framework
15. Support Inspection and Monitoring Activities of Arms Control Agreements and Regimes	<ul style="list-style-type: none"> Continued inspection, monitoring, and escort support for nuclear weapons arms control treaties Helping Ukraine, Belarus, and Kazakhstan to become non-nuclear weapons states Eliminated 64 SLBM launchers, dismantled 81 ICBMs, dismantled 20 heavy bombers, and sealed 59 nuclear weapons test tunnels and bore holes in FSU states Transitioned over 15,000 FSU scientists and engineers formerly employed in NBC weapon production to more peaceful civilian employment Streamlined management of R&D programs under DSWA to improve CTBT implementation Continued development of a global continuous threshold monitoring network and data fusion knowledge base for CTBT verification Technology R&D for CW/BW arms control treaty implementation, monitoring, and verification

6. DOE Nonproliferation Programs

DOE nonproliferation programs related to countering proliferation are described in this section. These efforts include its new Chemical and Biological Nonproliferation Program and key proliferation prevention activities to limit the spread of nuclear weapons, materials, technologies, and expertise. Key accomplishments since last year's report are also summarized.

6.1 Introduction: Relevant ACEs and DOE Policy Objectives

DOE strongly supports the counterproliferation missions of DoD and U.S. Intelligence primarily through its nuclear proliferation prevention activities. DOE plays a critical role, through its core nuclear work, in addressing ACE priorities in the detection, tracking, and protection of NBC weapon-related materials and components (DOE ACE priority 1); defending against and responding to paramilitary, covert delivery, and terrorist NBC threats through its Nuclear Emergency Search Team (DOE ACE priorities 2 and 4); by supporting inspection and monitoring activities of arms control agreements and regimes (DOE ACE priority 5); and by supporting U.S. Government export control activities (DOE ACE priority 9). In addition to its core nuclear nonproliferation activities, DOE began its Chemical and Biological Nonproliferation Program in 1997 which supports the detection, identification, and characterization of BW agents (DOE ACE priority 3). Building on its experience from its extensive "work for others" program, DOE is working closely with DoD and U.S. Intelligence to detect, characterize, and defeat NBC/M and underground facilities (DOE ACE priorities 6 and 8) and to detect and characterize worldwide nuclear proliferation (DOE ACE priority 7). DOE is requesting \$489.4 million in FY 1998, compared to \$411.45 million in FY 1997, for nonproliferation and proliferation prevention programs (a 19% increase). DOE's budget breakdown for FY 1998 is provided in Appendix D.

To reduce the international proliferation threat, DOE focuses its resources and expertise on the following near term priorities:

- Detecting and characterizing worldwide production of nuclear materials and weapons;
- Monitoring worldwide nuclear testing;
- Preventing and detecting the diversion or smuggling of nuclear materials;
- Securing nuclear materials, technology, and expertise in Russia and the FSU states;
- Preparing for, detecting, and responding to events involving chemical and biological agents;
- Limiting weapons-usable fissile materials worldwide;
- Ensuring transparent and irreversible reductions of global nuclear stockpiles;
- Controlling nuclear exports;
- Strengthening the nuclear nonproliferation regime; and

- Maintaining and continuously improving a program for nuclear emergency and nuclear terrorism response.

Key Accomplishments. Over the past year, DOE has achieved major successes in a number of areas. The Department played a pivotal role in achieving an indefinite extension of the Nuclear Nonproliferation Treaty (NPT) and in bringing about the signature of the CTBT. It provided leadership for National Laboratory activities aimed at assisting Russia and states of the FSU in critical areas such as export controls, nuclear materials control and accounting, and physical protection. To date, tens of tons of nuclear materials have been secured at over 40 facilities in Russia and seven other FSU states. During FY 1997 and FY 1998, the intense activity experienced during the past 24 months will continue as nuclear material security upgrades continue at the 17 facilities added during the past six months and as additional facilities are added under cooperation with the Russian Navy and icebreaker fleets, the transportation sector, and other locations and activities in the FSU. These successes reflect expanded cooperation at all locations in Russia, the FSU, and the Baltics where weapons-usable nuclear material is located. Further, DOE is committed to cooperating with these countries to ensure that proper export controls on nuclear-related materials, equipment, and technologies are enforced. The Department also anticipates completing the canning of spent nuclear reactor fuel canisters in North Korea and continuing to provide support for International Atomic Energy Agency (IAEA) inspections in both North Korea and Iraq, which reflect the Administration's commitment to reduce the global danger of nuclear weapons proliferation.

DOE also undertakes various activities, as a member of the intelligence community, related to nuclear proliferation intelligence data analysis and treaty monitoring. DOE nonproliferation and proliferation prevention activities are discussed in this section. Joint DOE/U.S. Intelligence activities are discussed in the Intelligence Annex to this report.

6.2 New DOE Initiative: The Chemical and Biological Nonproliferation Program

In FY 1997, directly in response to a CPRC recommendation to establish a joint DOE, DoD, and U.S. Intelligence R&D initiative in chemical and biological defense, DOE began its Chemical and Biological Nonproliferation Program (CBNP). Funding to initiate the program was provided in the Nunn-Lugar-Domenici amendment to the FY 1997 NDAA. The CBNP is focused on leveraging technology developed in the nuclear nonproliferation program and in numerous "work for others" projects to support CW/BW defense and counterproliferation efforts. Both DoD and U.S. Intelligence have long drawn upon DOE National Laboratory capabilities in a broad range of areas through the "work for others" process (through which other organizations can tap DOE National Laboratory capabilities). Such activities are focused on critical near-term defense requirements. Furthermore, DOE has maintained long standing and preeminent R&D programs in the basic chemical sciences, life sciences, and biotechnology in support of both traditional DOE missions (such as nuclear weapons production, production cleanup and environmental remediation, and occupational health and safety) and its Human Genome Project.

The CBNP is coordinating the application of technology developments arising from these efforts to meet various CW/BW defense and counterproliferation needs identified by users from across the interagency community. The CBNP is focusing its activities in four thrust areas: fundamental biology, prediction, detection, and mitigation. The fundamental biology area includes the genomic sequencing of priority pathogens, understanding structure/function relationships for biotoxins, and the development of tools for epidemiological monitoring. In the area of prediction, the CBNP is focusing on the development of atmospheric transport models for use in complex urban terrain (including the interior of structures). CW/BW detection activities center on the development of DNA-based technologies for bacterial agent detection and microseparation technologies for biotoxins and CW agents. The mitigation effort is concentrating on developing rapidly deployable, environmentally benign CW/BW decontamination technologies. DOE has budgeted \$17 million in FY 1997 and is requesting \$19 million in FY 1998 for the CBNP.

DoD and, to a lesser extent, other government agencies are sponsoring approximately \$30 million in CW/BW detection technology development at the National Laboratories. This work is primarily focused on expanding sensor capabilities, finding near-term solutions to the demilitarization of CW munitions stockpiles, and enhancing strategic and tactical intelligence collection and battlefield surveillance. Nonproliferation technology development undertaken by DOE for its nuclear mission, but which at the scientific level is also directly applicable to CW/BW counterproliferation, amounts to approximately \$70 million out of the \$200 million nuclear verification and control technology R&D program. The National Laboratories annually conduct over \$320 million in biotechnology research under the auspices and coordination of the DOE Biotechnology Interlaboratory Council. Chemical sciences research activities exceed this amount, involving such activities as studies of toxicological effects, development of new and miniaturized chemical and biological sensors, remote measurement and sensing of chemical and biological species, development of chemical and biological remediation techniques, and development of advanced chemical and biological laboratory analytical methods. The CBNP program is, therefore, well positioned to leverage this extensive technology base.

6.3 Status and Accomplishments of DOE Proliferation Prevention Programs

6.3.1 Detecting and Characterizing Worldwide Production of Nuclear Materials and Weapons. DOE, in support of DOE ACE priority 1, continued development of both remote and on-site complementary tools to detect and characterize foreign nuclear materials production activities. Acquisition of special nuclear materials is the most important step for a potential nuclear weapons proliferator to accomplish. The ability to detect production is, therefore, a critical proliferation prevention capability, and the ability to detect such production remotely is a powerful deterrent to proliferation. The CALIOPE (Chemical Analysis by Laser Interrogation Of Proliferation Effluents) program is a major remote sensing effort focused on providing such a capability. The CALIOPE program is composed of a multi-laboratory team with the goal of perfecting laser based remote sensing techniques for trace chemical effluent detection. The CALIOPE system will eventually consist of an airborne sensor system for the detection of chemical species in environments indicative of nuclear materials production. A key accomplishment during the past year was the fielding of a ground-based second generation carbon

dioxide Differential Absorption Lidar (CO₂ DIAL) system at the Nevada Test Site. In blind tests, this system demonstrated a significantly improved ability to detect and identify effluents which were released both individually and in mixtures. A second highlight was the execution of a DoD/DOE collaborative airborne CO₂ DIAL experiment called the Nonproliferation - Airborne Lidar Experiment (N-ABLE). N-ABLE demonstrated the ability to detect and identify sub-lethal concentrations of CW agents at extended standoff distances.

Other nuclear weapons clandestine production detection efforts are focused on the development of a small satellite demonstration system employing multispectral infrared imaging techniques. These imaging techniques are useful to detect and monitor such production indicators as reactor cooling pond temperatures, which can be used to estimate plutonium production rates. The system is scheduled for launch in FY 1999. Multispectral change detection also can be useful in detecting undeclared production related facilities and activities. Over the past year, substantial progress was made on an end-to-end modeling system that will aid in extracting facility power estimates from thermal signatures and on the assembly of a high precision thermal imager calibration facility. These efforts exploit a unique combination of DOE National Laboratory expertise in the nuclear weapons production cycle, production signatures, laser systems, rapid prototyping, and satellite systems engineering. Planned funding for production detection activities in FY 1998 is \$66.8 million compared to \$69.7 million in FY 1997.

6.3.2 Monitoring Worldwide Nuclear Testing. DOE, in support of DOE ACE priority 5, continued to develop and deploy elements of U.S. capabilities for monitoring the Limited Test Ban Treaty (LTBT) and the CTBT. DOE has a long standing partnership with DoD in this area, with DOE designing and producing nuclear detonation detection sensor systems for deployment on DoD Global Positioning System (GPS) and Defense Support Program (DSP) satellites (see subsection 5.2.4). These systems include optical, x-ray, gamma-ray, neutron, and electromagnetic pulse (EMP) sensors. During the past year DOE delivered four GPS payloads, upgraded GPS x-ray and optical instruments to extend their operating ranges to partially overlap with the CTBT regime requirements, and supported the launch of one DSP payload. Additional satellite-based, CTBT related activities included preparations for launch of a prototype satellite (denoted "FORTÉ") in the summer of 1997 to demonstrate an autonomously triggered, non-deniable, all-weather EMP sensor system, and the mapping of EMP backgrounds recorded by the ALEXIS satellite.

Ground-based technical methods associated with the CTBT, and specifically intended for the International Monitoring System (IMS), involve hydroacoustics, seismology, radionuclide detection and characterization, and infrasound techniques. DOE is actively pursuing specification of the IMS, and has supported U.S. Government efforts to obtain international agreement on a 60 station infrasound network and a 118 station seismic network. One focus of the seismic studies is to characterize regional areas of interest to improve the detection of smaller and potentially evasive tests. During the past year, a database of germane signals in China was assembled, including those from earthquakes, nuclear events, and high explosive events. Data analysis as well as algorithm and automated data processing development continue and draw upon National Laboratory experience in nuclear testing, mining and seismic geology, field measurements, and data fusion.

DOE completed design of a prototype infrasound station for eventual commercial production and possible inclusion in the IMS and expects to complete a prototype later this year. DOE National Laboratory experience in atmospheric science is especially relevant to this activity. Hydroacoustic monitoring provides yet another complementary tool to detect low yield, potentially evasive testing. DOE is also developing the specifications for an ocean monitoring system. Intermediate accomplishments include signature assessments of evasive explosions and the development of detection system specifications. Radionuclide techniques offer another important tool by providing critical forensic data to support CTBT verification. DOE is developing radionuclide particulate as well as prototype xenon gas samplers for commercialization and use by the IMS. DOE works closely with DoD to support CTBT verification activities. Planned funding for nuclear test monitoring activities in FY 1998 is \$81.2 million, unchanged from FY 1997.

6.3.3 Preventing and Detecting the Diversion and Smuggling of Nuclear Materials.

DOE's efforts to prevent and detect nuclear smuggling (DOE ACE priorities 1 and 7) are focused on securing nuclear material at its source, detecting stolen material in transit, responding to threatened and actual events, and determining the origin of intercepted material. Extensive DOE efforts are focused on protecting domestic nuclear materials and combating smuggling by securing potential sources of material in the U.S. Similar efforts in protecting nuclear materials worldwide are described in the next several sections. To deal with materials in transit, DOE works closely with DoD, U.S. Intelligence, and others in the interagency community providing technology support for detection and interdiction of stolen nuclear materials. In addition, DOE and National Laboratory personnel lead an international technical working group to help determine the sources of smuggled nuclear material by applying the full scope of laboratory forensic methods on intercepted materials. This program exploits multiple DOE expertise in environmental and nuclear material production signatures, radiochemical analysis, and law enforcement support. Planned funding for these activities in FY 1998 is \$43.5 million, up from \$31.0 million in FY 1997.

6.3.4 Securing Nuclear Materials, Technology, and Expertise in Russia and the FSU.

Two DOE programs comprise this activity: the Material Protection, Control and Accounting (MPC&A) program and the Initiative for Proliferation Prevention (IPP). The MPC&A program is primarily related to nuclear materials security and nonproliferation, and the goal of the IPP is to engage scientists and engineers from the weapons institutes of the FSU in peaceful technology applications in order to help stabilize personnel and resources that represent a potential risk of "expertise proliferation". Total funding requested for FY 1998 is \$167.0 million compared with \$142.6 million received for FY 1997 (which reflects a congressional plus-up of \$33.2 million).

The MPC&A Program. Material protection, control, and accounting cooperative upgrade programs are now under way at over 40 locations in Russia and seven other FSU states, representing more than 75% of the known locations possessing weapons-useable nuclear materials. To date, DOE has improved the security of tens of tons of weapons-useable nuclear materials, and negotiations are currently under way (scheduled to be completed this year) to expand MPC&A cooperation to include all weapons-useable nuclear material at all known facilities in the FSU. Sites not yet covered by the MPC&A program include four Russian Ministry of Atomic Energy (Minatom) nuclear weapons production and dismantlement facilities, a handful of sites that possess highly enriched uranium (HEU) fuel for naval nuclear propulsion, and a few small

research facilities. The MPC&A program does not address nuclear materials in assembled weapons; these will be covered in other cooperative programs between DoD and the Russian Ministry of Defense. Expanded cooperation in 1997 includes accelerated work with the Russian Navy, continued cooperative efforts at Minatom facilities, and the addition of security enhancements for nuclear material transport. FY 1998 efforts will include: i) increased equipment procurement; ii) funding additional work in Russia and Kazakhstan and accelerating ongoing work throughout the Minatom defense complex; iii) extending naval fuel work to cover the icebreaker fleet, naval support ships, and naval nuclear fuel transportation; iv) fully implementing efforts to improve the MPC&A for nuclear materials during transportation; and v) continued expanded cooperation with the Russian Federal Nuclear Radiation and Safety Authority (denoted by its Russian acronym "GAN"), including start-up of a pilot Russian federal MPC&A information system. Additional efforts to help improve the safeguards culture will be supported through development of nuclear regulations and training of GAN inspectors. Because of the size and complexity of some of the sites, full implementation of MPC&A safeguards is expected to take several years to complete, extending through the year 2002.

DOE is also working with governments and institutions of the FSU countries to strengthen their export control systems and, thereby, stem the illicit flow of nuclear materials, equipment, and technology. Much of this effort is accomplished at the grass-roots level through laboratory-to-laboratory cooperative programs in export control. The objective is to engage their scientific community in their own national export control systems, just as the expertise of the DOE National Laboratories serves the U.S. Government. DOE is also identifying and training technical experts in the FSU in how government agencies can administer export controls. DOE laboratories explain how to provide expert technical advice to the agencies, how to review export license applications, and what to be alert for in the export control arena.

The Initiative for Proliferation Prevention. As previously noted, the primary objective of the IPP is to stabilize personnel associated with NBC weapon programs within the FSU to minimize the risk of the proliferation of NBC weapons expertise. The IPP program draws scientists, engineers, and technicians from FSU NBC weapons programs into commercial ventures, avoiding potential "brain drain" to would-be proliferants and providing long term employment in non-weapons work. Under the IPP, DOE National Laboratories work with Russian and FSU institutes to identify and evaluate the commercial potential of various products related to R&D activities conducted at those institutes. Cooperative projects between a coalition of 75 U.S. laboratories, corporations, universities, and the nuclear inheritor states of the FSU have engaged more than 2,700 former weapons personnel in the FSU in projects ranging from MPC&A and nuclear safety to materials science, biotechnology, and instrumentation.

6.3.5 Limiting Weapons-Usable Fissile Materials Worldwide. Activities in this area focus on eliminating or reducing stockpiles of plutonium, promoting alternatives to the civilian use of plutonium, and reducing stockpiles of plutonium and HEU, as well as eliminating the civilian use of HEU. Further, DOE will be supporting U.S. Government efforts to negotiate an international convention to end the production of fissile material for weapons purposes. Following judicial review of objections to the return of foreign research reactor spent fuel, the U.S. has begun accepting shipments of U.S.-origin enriched nuclear materials from overseas. New funding in FY

1998 will support the development of advanced high density low enriched uranium fuels for Russian and Chinese reactors and for the remaining unconverted reactors in Western Europe and the U.S. DOE expects to begin work to convert the plutonium production reactor in Russia to energy-only production. Funding requested for this activity in FY 1998 is \$16.4 million, compared to \$16.6 million in FY 1997.

6.3.6 Ensuring Transparent and Irreversible Nuclear Reductions Worldwide.

Activities focus on: i) the exchange and confirmation of data on nuclear weapons materials inventories; ii) monitoring nuclear warhead production and expediting dismantlement of excess weapons under bilateral agreements; iii) conducting reciprocal bilateral inspections of nuclear components and materials; and iv) implementing the purchase agreement of 500 metric tons of HEU from dismantled FSU warheads while working to reduce weapons inventories. FY 1998 will see continued: i) technical expert support and conclusion of negotiations for Russian HEU Purchase Agreement transparency measures; ii) technical analysis relevant to plutonium Mutual Reciprocal Inspections (MRI); iii) negotiations with the Russians on plutonium MRI; and iv) technical and analytical support from the DOE laboratories to establish transparent and irreversible nuclear reductions. Funding requested for this activity in FY 1998 is \$3.5 million, compared to \$4.0 million in FY 1997.

6.3.7 Controlling Nuclear Exports. Activities in this area assist the international community in: i) effectively controlling exports and establishing responsible supplier policies; ii) implementing U.S. statutory licensing requirements for nuclear or nuclear-related export controls; iii) encouraging adherence to the Nuclear Suppliers Guidelines; and iv) strengthening multilateral supplier initiatives, including enhancing export controls in the FSU states. FY 1998 efforts will assist FSU states in controlling exports, reforming statutory licensing requirements, strengthening multilateral supplier initiatives, and promoting expanded information sharing and analysis. Funding requested for this activity in FY 1998 is \$16.5 million, down slightly from \$16.9 million in FY 1997.

6.3.8 Strengthening the Nuclear Nonproliferation Regime. FY 1996 and FY 1997 efforts promoted adherence to the NPT and increased the effectiveness and efficiency of the IAEA. DOE also provides technical expertise to enhance IAEA capabilities to detect undeclared nuclear activities. Successes included the negotiation and signing of the CTBT and facilitation of IAEA inspections of excess fissile materials. Other activities actively promoted regional nonproliferation measures. FY 1998 will see the negotiation and implementation of agreements for safeguards cooperation for improved material protection, control, accounting, and transparency with other countries and international organizations including China, Japan, South Africa, South Korea, the IAEA, European Atomic Energy Community, Argentina, Brazil, the Argentine-Brazil Accounting and Control Commission, and Australia. Funding requested for this activity in FY 1998 is \$34.4 million, down from \$39.3 million in FY 1997.

6.3.9 Nuclear Emergency and Terrorism Response. DOE maintains several emergency response assets postured to respond to events that may occur should proliferation prevention efforts fail. DOE conducts analyses and provides operational and technical support in response to nuclear emergency and terrorism events worldwide. This includes the Nuclear Emergency Search

Team (NEST) which has primary responsibility for responding to acts of nuclear terrorism or other incidents involving nuclear weapons or devices. It can be deployed under the authority of the FBI for domestic incidents and the Department of State for foreign incidents. Requested funding for DOE emergency management and response programs in FY 1998 is \$41.1 million up from \$35.3 million in FY 1997. Additional details are provided in Section 8.4.

6.4 DOE Technologies Developed to IOC

Except for the specific portions of the satellite nuclear detonation detection activities for nuclear test monitoring, DOE-developed technologies are not normally taken to initial operating capability (IOC). Under DOE technology development activities, the end product is a capability demonstration of a system or method, most commonly in the form of a field capable prototype, developed in direct response to requirements identified by a user agency (e.g., DoD or U.S. Intelligence). It is at this stage in the hardware development cycle that DOE program managers encourage and participate in the transfer of the technology product to the user community for field hardening, engineering refinements, and production.

DOE currently produces satellite-borne sensors for the national capability to monitor and verify compliance with the LTBT and the CTBT. These sensors are secondary payloads on the GPS and DSP satellites (as described above in subsection 6.3.2). DOE is developing the next generation of improved optical, x-ray, and space environmental sensors to provide a better capability to monitor the continuation of the LTBT and to enable the U.S. to monitor and verify the CTBT after entry-into-force. The sensor systems under development are planned to go from development, through IOC, to production to meet required delivery dates for the next generation of GPS satellites. In addition to these satellite systems, DOE is also developing ground based components for airborne radionuclide sampling systems and will be heavily involved in supporting DoD and other agencies of the U.S. Government in identifying reliable commercial suppliers.

7. U.S. Intelligence Programs to Counter Proliferation

In this section, U.S. Intelligence activities and programs to counter proliferation, including strategic and operational planning processes, are briefly described, along with some intelligence successes achieved to date. Additional, more detailed information may be found in the Intelligence Annex to this report.

7.1 Introduction: Relevant ACEs and U.S. Intelligence Strategy Objectives

U.S. Intelligence has received clear and concise policy guidance for conducting its intelligence activities. This guidance begins with Presidential Decision Directives that address weapons and related technology proliferation, including, for example, nuclear smuggling. Additional guidance comes from annual congressional Defense and Intelligence Authorization and Appropriation Acts, reports to Congress by U.S. Government agencies on countering proliferation activities, and DoD counterproliferation policy and military mission objectives. These outline a national nonproliferation strategy centered around four key aspects: i) prevent the acquisition of NBC/M; ii) roll back existing NBC/M capabilities; iii) deter NBC/M use; and iv) adapt military forces and emergency assets to respond to NBC/M threats.

A focused set of enduring intelligence needs has been developed in response to the policy guidance reflected in the four aspects of U.S. nonproliferation strategy cited above. These enduring intelligence needs are used to chart the progress of U.S. Intelligence in making use of existing capabilities and in defining and developing areas for new investments.

U.S. Intelligence is working to provide accurate, comprehensive, timely, and actionable foreign intelligence on a broad policy and enforcement front. This has included:

- Support to policy makers responsible for extending and implementing nonproliferation regimes;
- Support to DoD efforts to counter the threat posed by biological and chemical weapons; and
- Maintaining a surge capability to quickly deploy specialists outside the U.S. to the scene of a terrorist nuclear or radiological threat to provide the U.S. Mission and host government advice and guidance on dealing with the threat. (During such an incident, the specialists would coordinate fully with the appropriate U.S. Government agencies, keeping them informed and drawing upon their expertise should follow-up action be required.)

Strategic Planning Process. U.S. Intelligence has instituted a corporate strategic planning and evaluation process to support efforts to counter proliferation. This process contributes to the Intelligence Community's National Needs Process and the National Foreign Intelligence Program

(NFIP), the Joint Military Intelligence Program (JMIP), and the Tactical Intelligence and Related Activities (TIARA) Program and Planning Guidance. A major benefit of this effort has been the placement of a significant number of DoD personnel within the DCI's Nonproliferation Center (NPC). This has helped integrate intelligence support to DoD counterproliferation needs and actions. U.S. Intelligence also has expanded its relations with the law enforcement community. Both the FBI and the U.S. Customs Service have assigned senior agents to the NPC to assist in developing initiatives to counter proliferation activities. The NPC is also working to enhance information sharing technologies and resources in support of the law enforcement community's nonproliferation efforts.

As the threat of proliferation has increased, U.S. Intelligence capabilities to support nonproliferation efforts have been redirected or expanded and now include:

- Assessing the intentions and plans of proliferating nations;
- Identifying NBC/M programs and clandestine transfer networks set up to obtain controlled materials or launder money;
- Supporting diplomatic, law enforcement, and military efforts to counter proliferation;
- Providing direct support for multilateral initiatives and security regimes; and
- Overcoming denial and deception practices established by proliferators to conceal their programs.

U.S. Intelligence has taken or participated in actions to address the overall challenges facing U.S. nonproliferation efforts, including:

- Identifying funds to maintain technical intelligence collection programs related to NBC/M tests;
- Fostering the development of new technologies with the potential to improve the ability to detect NBC/M activities at significantly longer ranges than possible today;
- Establishing relationships to enhance cooperation between U.S. Intelligence and R&D components;
- Redirecting and reorganizing intelligence activities to increase and sharpen the focus of nonproliferation-related efforts, both analytically and operationally; and
- Redirecting programs to assist the FBI and U.S. Customs Service efforts to identify, target, and apprehend individuals engaged in the trafficking and smuggling of nuclear materials worldwide.

Operational Planning Process. The Defense Intelligence Agency (DIA) is linking counterproliferation intelligence production more directly to the CINCs' Deliberate Planning Process. DIA is taking guidance from the Joint Strategic Capabilities Plan and direction from the Commands' J-2s (Intelligence), J-3s (Operations), and J-5s (Plans and Policy) to allow U.S. Intelligence to more clearly define and satisfy the intelligence needed to support CINC counterproliferation contingency planning and operations.

Intelligence Successes to Date. Many of U.S. Intelligence's successes cannot be described in this unclassified setting. The Intelligence Annex to this report contains a more thorough discussion of the activities and successes of U.S. Intelligence. However, some that can be described here include:

- Support to efforts of the Department of State to provide actionable intelligence to the UN Special Commission's inspection and monitoring efforts in Iraq;
- Development of a list of indicators to alert collectors and analysts that CW and BW are about to be used; similar initiatives are also underway to provide early warning alerts for the possible diversion of nuclear materials;
- Support to Congressional committees, including a report that reviewed and evaluated nonproliferation programs in the NFIP FY 1998 budget submission; and
- Development of a detailed set of information needs to guide intelligence collection and analysis, known as *Nonproliferation: Compendium of Country-Specific Priority Intelligence Needs and Actions*.

But even if all of the intelligence accomplishments could be listed, the intelligence community recognizes that there is more to do. Over the next year, U.S. Intelligence will continue to:

- Strengthen and focus its integrated collection strategy;
- Work to enhance the intelligence community's information processing capabilities;
- Implement unified and standardized information systems, to include shared access by intelligence and consumer organizations;
- Strengthen and broaden foreign language training and support tools;
- Continue to review and evaluate new methodologies and technologies; and
- As part of the DCI and Secretary of Defense joint program and budget reviews, continue to evaluate intelligence resources and capabilities for optimal support for actions to counter proliferation.

The danger of NBC use is taken seriously by U.S. Intelligence. It has not been long since the poison gas attack in the Tokyo subway. Press reporting in the U.S. focused on the possibility of a similar attack happening here. U.S. Intelligence fully recognizes that after-the-fact efforts are not adequate – it is necessary to stop NBC attacks before they occur. Intelligence is the key. U.S. Intelligence has added resources to its efforts over the last few years as the threat has increased, and it will continue to do all it can to meet the needs of its policy, defense, and enforcement customers and to protect the American public at home and abroad.

7.2 Status and Accomplishments of U.S. Intelligence Programs to Counter Proliferation

Descriptions of the status and accomplishments of U.S. Intelligence programs to counter proliferation, including details of new initiatives and an overview of capability shortfalls and areas for progress, can be found in the Intelligence Annex to this report.

8. DoD, DOE, and U.S. Intelligence Programs for Countering Paramilitary and Terrorist NBC Threats

This section provides descriptions of the R&D and acquisition programs and related activities of DoD, DOE, and U.S. Intelligence to counter paramilitary and terrorist NBC threats, including new interagency initiatives to deal with these threats.

8.1 Introduction: Relevant ACEs and Policy Objectives

The activities and programs described in this section respond to the ACE priorities associated with supporting SOF activities and defending against paramilitary, covert delivery, and terrorist NBC threats (DoD/U.S. Intelligence ACE priority 5 and DOE ACE priority 2) and with providing consequence management for terrorist incidents involving NBC weapons effects and the release or dispersal of NBC agents (DoD/U.S. Intelligence ACE priority 6 and DOE ACE priority 4), including providing assistance and support to "First Responders". First Responders are those local, state, and federal authorities that have crisis and consequence management responsibilities in the event of an NBC terrorism incident and who are typically the first to arrive on the scene.

In January 1997, the Federal Emergency Management Agency (FEMA) and the FBI submitted their *Report to Congress on Response to Threats of Terrorist Use of Weapons of Mass Destruction*. The report, prepared at the direction of the President and Congress, assesses current federal crisis and consequence management capabilities, identifies shortfalls in these areas, and examines measures to remedy the shortfalls. It also describes the roles that various departments and agencies play in preventing, mitigating, and managing NBC-related terrorist incidents. Of particular interest to the CPRC are the roles of DoD, DOE, and U.S. Intelligence. DoD responsibilities include designating military personnel and equipment to perform emergency technical response missions, such as: NBC sample collection, analysis, and identification of on-site contaminants; decontamination; air monitoring; medical treatment; and securing, transporting, and disposing of NBC devices "when beyond the capability of an otherwise cognizant agency" (i.e., the FBI, Environmental Protection Agency (EPA) for CW/BW, or DOE or EPA for nuclear and radiological materials). DOE responsibilities include "analyzing threat messages ... for technical content, nuclear design feasibility, and general credibility, and for providing such analyses to the FBI"; designating personnel and equipment to provide technical and scientific advice and recommendations, including risk/consequence assessments, to the on-scene commander; and designating Nuclear Emergency Search Team (NEST) units to assist in locating and identifying nuclear materials and assessing and disabling suspected nuclear devices. Both DoD and DOE counterterrorism responsibilities directly assist the FBI in its role as on-scene commander for NBC terrorist incidents in the U.S. U.S. Intelligence supports the federal counterterrorism effort in several ways, including participating in interagency working groups such as the Interagency Intelligence Committee on Terrorism and the Chemical/Biological/Radiological Subcommittee. These working groups provide opportunities for federal agencies responsible for responding to NBC terrorist incidents to develop closer working relationships.

8.2 New Interagency Initiatives to Counter Paramilitary and Terrorist NBC Threats

8.2.1 Interagency Domestic Preparedness Initiatives. Subtitle A, "Domestic Preparedness," of the Defense Against Weapons of Mass Destruction Act of 1996 (Public Law No. 104-201, Secs. 1411-1417, 110 Stat. 2717-2725, 1996) directs the President to: i) enhance the capability of the Federal Government to prevent and respond to terrorist incidents involving NBC weapons, and ii) provide enhanced support to improve the capabilities of state and local emergency response agencies to respond to such incidents. FEMA chairs the Senior Interagency Coordination Group which facilitates interagency coordination of policy issues and program activities for consequence management initiatives. This group also includes representatives from the Departments of Defense, Energy, Justice, Health and Human Services, Transportation, and Agriculture, the EPA, and General Services Administration. DoD has allocated \$46 million in FY 1997 to enhance emergency domestic preparedness and response to terrorist NBC attacks. Under the leadership of ASD(SO/LIC), DoD is implementing the following activities:

- *Domestic Emergency Response Preparedness.* Initiatives include: developing First Responder training programs for local authorities in 26 metropolitan areas; implementing an NBC release hot line; improving DoD's chemical/biological rapid response by establishing the Chemical Biological Quick Reaction Force (CBQRF) subordinate to the DoD Response Task Force Headquarters; conducting exercises to evaluate and improve current DoD coordination capabilities for incidents involving NBC agent releases; and developing and conducting exercises and preparedness tests in coordination with federal, state, and local agencies to improve the interagency response.
- *The Chemical/Biological Incident Response Force (CBIRF).* The CBIRF, established by the Marine Corps to deal with the consequences of incidents involving the release of CW/BW agents, is receiving additional funding under this initiative to expedite fielding of improved CW/BW protection and detection equipment for consequence management. The CBIRF is an element of the CBQRF.
- *The Consequence Management 911-BIO ACTD and Other R&D Activities.* The proposed 911-BIO ACTD will evaluate and accelerate the fielding of new technologies for use by the Army's Technical Escort Unit and the CBIRF to respond quickly and effectively to terrorist use of BW. Other related R&D activities are also being sponsored.
- *Metropolitan Medical Strike Teams.* DoD is assisting the Secretary of Health and Human Services in establishing Metropolitan Medical Strike Teams to provide prompt medical services to victims exposed to NBC weapons effects.
- *U.S. Customs Service Support.* DoD is assisting the U.S. Customs Service in the acquisition of equipment to detect and interdict the movement of NBC weapons and related materials across U.S. borders.

In FY 1998, DoD plans to continue these domestic preparedness and response initiatives focusing on: i) providing emergency response preparedness through First Responder training and assistance to metropolitan area authorities; ii) improving DoD's rapid chemical and biological

response capabilities; and iii) conducting preparedness exercises in coordination with federal, state, and local agencies.

8.2.2 Other Interagency Initiatives to Counter Paramilitary and Terrorist NBC Threats. The following interagency activities are important in addressing the global threat of NBC terrorism.

The CPRC's Role in Countering Paramilitary and Terrorist NBC Threats. The CPRC is coordinating DoD, DOE, and U.S. Intelligence activities and programs developing technologies and systems that can be used by federal, state, and local emergency response teams to counter terrorist activities involving NBC weapons. It also coordinates these activities with other interagency organizations, including the TSWG. The CPRC brings senior level attention to the activities and programs of DoD, DOE, and U.S. Intelligence to help ensure the effective application of resources and expertise in countering these threats. In recognition of the CPRC's responsibilities for countering NBC paramilitary and terrorist threats, ASD(SO/LIC) has been included as a charter member of the CPRC Standing Committee established in 1996.

The Technical Support Working Group. The TSWG was established as a working group of the NSC's Interagency Working Group on Counterterrorism and acts as its technology development component. It is primarily concerned with rapid prototype development of equipment to address critical multi-agency and future threat counter- and anti-terrorism requirements. While its funds are derived principally from DoD, the Departments of Energy and State and the FBI also contribute directly to project activities. The TSWG develops technologies for a variety of users including DoD, DOE, U.S. Intelligence, Secret Service, U.S. Marshals Service, Federal Aviation Administration, U.S. Customs Service, and the Center for Disease Control and Prevention. DoD, under the direction of ASD(SO/LIC), develops technology to meet these interagency requirements through the CTTS program. A significant portion of the TSWG's technology development efforts are directly related to countering NBC weapons.

8.3 DoD Activities and Programs to Counter Paramilitary and Terrorist NBC Threats

In coordination with the FBI and other U.S. Government counterterrorism components, DoD is continuing to pursue several activities to counter paramilitary and terrorist NBC threats. These efforts include supporting, training, and equipping DoD teams to detect, neutralize, and render safe NBC weapons and devices in permissive and nonpermissive environments both in the U.S. and overseas. These DoD teams include the Army's Technical Escort Units (TEU) and the 52nd Ordnance Group, the Navy's Defense Technical Response Group (DTRG), Navy Explosive Ordnance Disposal (EOD) units, and SOF units. DoD is also actively supporting the development of robust consequence management capabilities, like those embodied in the Marines' CBIRF, to respond to incidents involving NBC weapons, including the release of NBC agents. These activities and programs are discussed in the remainder of this section.

The Defense Against Weapons of Mass Destruction Act of 1996 (Sec. 1414 of the FY 1997 NDAA) also directed the Secretary of Defense to "develop and maintain at least one domestic terrorism rapid response team composed of members of the Armed Forces and employees of the

Department of Defense who are capable of aiding Federal, State, and local officials in the detection, neutralization, containment, dismantlement, and disposal of weapons of mass destruction containing chemical, biological, or related materials.” In addition, Presidential Decision Directive-39, dated June 1995, is the principal interagency guidance for counterterrorism activities. The two DoD mission documents continuing to guide the Department’s counterterrorism response efforts are the CJCS’s *Counterproliferation 0400 CONPLAN* and the *Counterterrorism 0300 CONPLAN*. These documents, developed by each CINC for their Area of Responsibility, delineate user requirements and ensure “requirements/demand pull” of technology development activities. The CINCs are developing, in the current fiscal year, individual consequence management plans as part their area-specific concept plans as required by the *Counterproliferation 0400 CONPLAN*.

DoD is budgeting a total of \$172.6 million for FY 1998 in technology R&D and acquisition activities in response to ACE priorities directly involving countering NBC paramilitary and terrorist threats (i.e., DoD ACE priorities 5 and 6).

8.3.1 New DoD Initiatives. Four new DoD initiatives, in addition to the interagency domestic preparedness initiatives described above, are described below. Additional details are provided in Table 8.1 and in Appendix C.

DoD’s Force Protection Initiative. The Secretary of Defense has tasked the CJCS to review the force protection capabilities of U.S. forces worldwide. Several DoD Agencies and OSD organizations are actively involved in this initiative. Currently, each Service is responsible for protecting its own personnel and facilities. Near-term force protection enhancements are being fielded through the Physical Security Equipment Action Group under the guidance of the Physical Security Equipment Steering Group (chaired by the Director of Strategic and Tactical Systems, PDUSD(A&T)(S&TS)) and funded under the OSD Physical Security Equipment Program (see below). These efforts are being coordinated with the technology development activities of the TSWG/CTTS. DSWA is supporting the initiative by conducting force protection assessments of facilities worldwide, fielding assessment teams to identify and evaluate force protection shortfalls, and assisting commanders in rectifying the identified shortfalls. The CBD Program is also assisting in this effort. The CJCS has approved DSWA’s proposed methodology and concept of operations for conducting the assessments. Using existing contractor resources, DSWA has conducted three assessments to date. DSWA has also organized and conducted a symposium with industry to publicize and seek ideas and inputs to fulfill CINC and Service requirements to address force protection shortfalls. Key milestones are to: i) complete 50 assessments by the end of calendar year 1997 and complete 100 assessments by the end of 1998; ii) continue to apply the latest technology to achieve enhanced force protection; and iii) define a prioritized technology R&D plan to address key force protection shortfalls.

The Chemical/Biological Incident Response Force. In April 1996, at Camp Lejeune, North Carolina, Marine Forces Atlantic activated a dedicated unit to respond to the consequences of incidents involving the release of CW/BW agents. This self-contained, self-sufficient response unit is integrated into the consequence management plans of the CINC U.S. Atlantic Command and is trained to deploy domestically or overseas in support of the CINCs or the Department of State. The CBIRF includes approximately 350 Marines and Sailors organized into six elements: a

command element, a chemical/biological reconnaissance element, a chemical/biological decontamination element, a medical element, a security element, and a service support element. The CBIRF will have enhanced capabilities for detecting and identifying specific CW/BW agents, assessing downwind hazards, conducting advanced lifesaving support, and decontaminating patients to facilitate medical treatment. It will employ state-of-the-art equipment to treat casualties via a "reachback" link to civilian scientific and medical experts, conduct advanced lifesaving support, and provide communications and an enhanced transportation capability. The CBIRF is a key player in the 911-BIO ACTD currently under development. As a result of congressional plus-up funding increases, the Marine Corps has been able to rapidly equip CBIRF with improved protection and BW detection equipment.

The Consequence Management "911-BIO" ACTD. ATSD(NCB)'s Deputy for Counterproliferation has begun executing a "fast-track" consequence management ACTD involving the CBIRF and the Army's TEU. ACTD demonstrations will take place in June and December 1997 to demonstrate the applicability of key BW detection, modeling and simulation, individual protection, and decontamination technologies in a consequence management setting. The objective of the 911-BIO ACTD is to enhance military capabilities to respond effectively to the terrorist/paramilitary use of BW by demonstrating: i) key BW consequence management technologies in a field environment, in part to validate R&D and acquisition priorities; ii) integrated operational concepts of CBIRF and TEU; and iii) the ability of both DoD units to integrate their operations with other federal, state, and local agencies. The TEU and CBIRF will use existing BW agent detection and decontamination technologies and exercise emerging telemedicine and "reachback" communications technologies. Modeling techniques for agent dispersion inside buildings will also be evaluated. The concepts and technologies demonstrated during the ACTD will be made available to the users as operational prototype systems. Provided funds are available in FY 1998, the Counterproliferation Support Program will work with the Army's Chemical and Biological Defense Command's (CBDCOM) Domestic Preparedness Office and the CBIRF to ensure procurement and implementation support for equipment and capability "leave behinds" for the user community.

Chemical and Biological Defense Program Anti-Terrorism Support. The CBD Program is supporting anti-terrorism activities by conducting vulnerability assessments of DoD installations to CW/BW terrorism threats. The knowledge gained from these assessments is used in training U.S. forces to respond to CW/BW threats. In addition to developing training programs, efforts are focusing on developing a suitable process and establishing an assessment team to conduct the vulnerability assessments.

8.3.2 Counterproliferation Support Program Projects to Counter Paramilitary and Terrorist NBC Threats. The Counterproliferation Support Program is coordinating its technology prototype development activities in this functional area with the TSWG, through ASD(SO/LIC) and its CTTS program, the U.S. Special Operations Command (USSOCOM), and Joint Service EOD units to ensure relevance and responsiveness in meeting user needs. The DOE National Laboratories are also contributing to these projects. Project details are discussed below, in Table 8.1, and in Appendix C (Table C.1).

In support of the *Counterterrorism 0300 CONPLAN* and the *Counterproliferation 0400 CONPLAN*, ATSD(NCB) on behalf of the Counterproliferation Support Program, operates under a Memorandum of Agreement with USSOCOM and is finalizing a Terms of Reference with ASD(SO/LIC). These agreements are facilitating closer cooperation among the organizations and streamlining the process of responding to the requirements of CINC SOCOM, DoD, and interagency organizations for countering NBC paramilitary and terrorist threats. These agreements focus on leveraging CW/BW defense technologies to accelerate their fielding and adapt them to the special operations environment. Accelerating technology development helps address the critical technology shortfalls of Service and SOF units tasked with NBC-related missions. This initiative will also facilitate the transfer of DoD-developed technologies to other interagency response groups within DOE, U.S. Intelligence, the FBI, Secret Service, U.S. Customs Service, and the Department of State.

The Counterproliferation Support Program is working closely with the TSWG and the CTTS program to improve capabilities unique to the interagency emergency response needs of First Responders. Projects planned for FY 1998 include development of: i) a deployable Chemical/Biological Sentry System (CBSS) for detection and warning of CW/BW agents; ii) a Biological Detection Kit for rapid field screening and generic detection of BW agents; iii) a compact, long shelf-life "Escape Hood" (formerly "Quick Mask™") for short-duration protection against CW/BW agents. Key accomplishments for the First Responder projects since last year's report include: i) integration of CW/BW sensors and development of interface and display software for the CBSS; ii) component testing of the prototype Biological Detection Kit; iii) completion of a market survey and assessment of current-off-the-shelf protective masks for potential application as the Escape Hood; and iv) user implementation of a prototype chemical/biological EOD suit and a modified EOD helmet used by the TEU during the 1996 Olympic Games.

The Counterproliferation Support Program is funding a wide range of specialized SOF technologies adapted to the special operations environment to detect, disable, render safe, and, if necessary, recover critical components from NBC devices in a nonpermissive and time sensitive environment. Technology prototypes under development include: i) a nonintrusive CW agent detection system using swept frequency acoustic interferometry (SFAI) for identifying CW agents in situ without requiring direct sampling of the agent; ii) a drill extractor that enables rapid sampling of suspected CW or BW containers without releasing the contents; iii) a SOF-specialized version of the FOWG BW detector for rapid identification of sampled BW agents; iv) a SOF adapted version of the ICAM/ACADA CW detectors; v) a rapid transport container for recovered NBC weapons and materials; vi) equipment to enhance capabilities to gain access to suspected NBC weapon facilities; and vii) specialized devices for NBC target structural and functional defeat. Key accomplishments of the SOF-specialized technology projects include: i) testing and evaluation of a fielded SFAI prototype; ii) completion of a SOF FOWG BW detector prototype and delivery of prototype devices to the CBIRF; and iii) completion of a drill extractor fieldable prototype for CW/BW sample retrieval and procurement of additional prototypes for training units.

The Counterproliferation Support Program is also funding, in cooperation with the Navy EOD Technology Office, efforts to acquire and train EOD response teams to access and use specialized equipment stored in the U.S. and prepositioned abroad (and assigned to the geographic

CINCs). EOD teams based in the U.S. have long standing relationships with state and local law enforcement agencies and are likely to be the first on the scene in an incident involving an NBC device. They conduct the "access phase", i.e., physically gaining access to the weapon or device, before specialized mission units (e.g., TEU or NEST) arrive to begin disabling the device. Availability of forward deployed equipment enhances training, operational readiness, and technical response capabilities necessary to counter the full spectrum of NBC threats. Accomplishments include the continuing acquisition and forward deployment of specialized EOD equipment to support training and readiness sustainment. To date, this program has trained and equipped over 150 EOD specialists and 30 officers in advanced access and disablement procedures for countering improvised NBC devices – a capability that did not exist two years ago. In FY 1998, efforts will concentrate on instituting closer collaboration with the Explosive Ordnance Disposal/Low-Intensity Conflict (EOD/LIC) program (see subsection 8.3.3 below) to expedite the introduction of advanced access and disablement prototype equipment into the user's training element.

8.3.3 Other DoD Programs to Counter Paramilitary and Terrorist NBC Threats.

DoD Agency and Joint Service programs are also addressing counterproliferation ACEs in countering paramilitary, covert delivery, and terrorist NBC threats. These are described below.

OSD Counterterror Technical Support Program. The CTTS Program is managed by ASD(SO/LIC) and addresses the joint interagency requirements developed by the TSWG. The CTTS program develops technology and prototype equipment with direct operational application to the national counterterrorism effort. Projects include technology development to support operations involving: hostage rescue; personnel protection; unconventional and NBC weapons and devices; attacks on installations, infrastructure, and the general populace; and explosives detection and disposal. The CTTS program responds to multi-agency requirements and priorities, and many of its constituent projects are co-funded in cooperation with non-DoD emergency response organizations. Current priorities are the detection and neutralization of terrorist-built explosive devices and countermeasures against CW/BW terrorism. Development of diverse products is continuing under the Explosives Detection and Disposal and Weapons of Mass Destruction Countermeasures segments of the CTTS program, including: i) detectors employing advanced technology Raman light spectroscopy to detect, characterize, and identify residues of improvised explosive devices; ii) blast suppression and CW/BW dispersal mitigation technologies and techniques; and iii) a container inspection system designed to non-intrusively determine materials present in large shipping containers. Key accomplishments since last year's report include: i) continued development of specialized access tools; ii) completion of technology development to detect improvised explosive devices utilizing chemiluminescence and three-dimensional x-ray technology; iii) test and evaluation of advanced mitigation techniques and systems for suppression of explosively dispersed CW/BW agents; iv) completion of a prototype enzyme decontamination mixture for destruction of G-type nerve agents, such as sarin; v) initial development of an improved blast protective suit with combined CW/BW protection; and vi) development of an improved in-field capability to detect nuclear materials. Additional project details are provided in Table 8.1 and in Appendix C (Table C.9).

OSD Joint Physical Security Equipment Program. This program consolidates related DoD Joint Service and Agency RDT&E programs developing advanced technologies for protecting critical, high value military assets from paramilitary, terrorist, intelligence, and other

hostile threats. Efforts focus on protecting personnel, facilities, and high value weapons systems, including nuclear and chemical weapons systems and storage facilities. This program is serving as the focal point for near term upgrades to U.S. facilities under the Force Protection Initiative discussed above. Key accomplishments since last year's report include: i) completion of numerous qualification tests and evaluations of integrating video motion detection capabilities into the Tactical Automated Security System; ii) installation of an interior Mobile Detection Assessment Response System in a Naval facility for operational evaluation; iii) installation of a Waterside Security System at Submarine Base Kings Bay, Georgia; iv) testing of promising commercial-off-the-shelf technologies for the Portable Explosive Detection project; and v) demonstration of prototype sensor hardware for various detection systems. Additional project details are provided in Table 8.1 and in Appendix C (Table C.9).

SO/LIC Analytical Support. This project provides specialized research and analytical support for ASD(SO/LIC). Projects address a broad spectrum of technical, acquisition, and policy issues relating to special operations, counter- and anti-terrorism, peacekeeping, psychological operations, counterinsurgency, unconventional warfare, and contingency operations. Additional project details are provided in Table 8.1 and in Appendix C (Table C.9).

OSD Explosive Ordnance Disposal/Low-Intensity Conflict Project. This project is a rapid prototyping effort to provide technology and equipment to military operators who are confronted with explosive threats. Tasks focus on detection, countermeasures, and neutralization of explosive devices of all sorts. Requirements submitted by the Joint Service EOD community and other LIC-oriented military users are prioritized by the OSD EOD/LIC Coordination Group. Additional project details are provided in Table 8.1 and in Appendix C (Table C.9).

Navy Joint Service EOD Systems and Procedures Programs. The Joint Service EOD Systems Program develops operational prototype EOD systems to detect, locate, identify, render safe, and dispose of unexploded ordnance of all types, including NBC munitions. Key accomplishments include: i) initial development of a "main charge disrupter" and approval to initiate development of a lightweight disrupter to aid in neutralizing explosive devices; and ii) continued development of an improved ordnance locator system. The Joint Service EOD Procedures Program complements the Joint Service EOD Systems Program by funding the Navy's DTRG, a contingency unit that mobilizes during incidents involving NBC weapons, and by supporting the testing and validation of EOD prototype systems. This program also develops specialized procedures, including procedures for handling nuclear munitions, required for detecting, localizing, and rendering safe unexploded ordnance. The in-service library of EOD field procedures developed under this program consists of over 2,800 EOD bulletins, approximately 100 of which address nuclear munitions. Key accomplishments since last year's report include: i) maintaining DTRG readiness; ii) continued development of EOD render safe procedures for foreign and U.S. ordnance; and iii) development of improved countermeasure procedures for improvised nuclear devices. Additional project details are provided in Table 8.1 and in Appendix C (Table C.4).

OSD Joint Robotics Program. This program was established in response to congressional guidance to consolidate Service and DoD Agency robotics programs on unmanned ground vehicle (UGV) systems and is executed under the oversight of the Director for Strategic and Tactical

Table 8.1: Key DoD Programs to Counter Paramilitary and Terrorist NBC Threats

Program/Project Title	Project Description	DoD ACE	Agency	FY 98 Budget [\$M]	PE No.
New Initiatives					
• Domestic Preparedness Initiative	• Improve NBC emergency response preparedness and coordination with state and local agencies through First Responder training, interagency exercises, and technical assistance	5, 6	ASD (SO/LIC)	49.500	O&M
• DoD's Force Protection Initiative	• Conduct force protection assessments, field assessment teams to identify and evaluate shortfalls, and develop an R&D support plan	5	DSWA	4.500	pending
• Marine Corps CBIRF	• Unit dedicated to managing the consequences of incidents involving CW/BW release	6	USMC	20.200	O&M
• Consequence Management 911-BIO ACTD	• ACTD to enhance and integrate military capabilities to respond to terrorist/paramilitary use of BW	6, 5	ATSD (NCB)	—*	
• CBD Program Anti-Terrorism Support	• Vulnerability assessments of DoD installations to CW/BW threats and training for threat response	5	Joint Service	3.688	605384BP
CP Support Program					
• First Responder Support	• Development of capabilities and technologies to enhance interagency response to CW/BW threats	6, 5	SOCOM	1.200	603160D
• Specialized SOF Technologies and Prototype Devices	• Develop technologies adapted for SOF use that enhance capabilities to detect, access, disable, render safe, and recover NBC devices and improve NBC target defeat, mobility, and access capabilities	5	SOCOM	10.029	603160D
• Joint EOD Readiness Sustainment	• Operational plans and exercises and readiness sustainment training against NBC devices	5	SOCOM Navy	0.656	603160D
Strongly Related CP Programs					
• Counterterror Technical Support Program	• Develop technical capabilities and prototype systems to detect, render safe, and defend against paramilitary and terrorist NBC threats	5, 6	ASD (SO/LIC)	29.087	603122D
• Joint Physical Security Equipment	• Consolidates DoD activities for facility and nuclear and other high value weapons protection equipment	5	PDUSD (S&TS)	17.789	603228D
• SO/LIC Analytical Support	• Research/analysis of technical, acquisition, and policy issues relating to special operations, counterterrorism, and unconventional warfare	5, 6	ASD (SO/LIC)	1.611	603122D
• Explosive Ordnance Disposal/ Low Intensity Conflict Program	• Rapid prototyping effort to provide technology and equipment for the detection and neutralization of explosive devices	5	ASD (SO/LIC)	4.165	603122D
• Navy Joint Service EOD Systems Program	• Specialized EOD equipment to locate, access, and render safe explosive devices, including NBC devices, for all Services	5	Navy ASD (SO/LIC)	4.720	603654N
• Navy Joint Service EOD Procedures Program	• Tests and validates prototype EOD systems and develops specialized procedures for EOD units • Funds DTRG technical support unit	5, 6	Navy ASD (SO/LIC)	6.613	604654N
• Joint Robotics Program	• Consolidates Service/DoD efforts to demonstrate mature robotics technologies for EOD and other applications	5	PDUSD (S&TS)	16.399	603709D

* ACTD demonstrations will be completed in the first quarter of FY 1998 using FY 1997 dollars. FY 1998 funding, including funding for technology leave-behinds, has not been determined.

Systems (under the PDUSD(A&T)(S&TS)). The objective of the program is to demonstrate and validate mature robotics technologies that are adaptable to multi-Service applications, provide an unmanned operational capability in hazardous and contaminated environments, provide improved battlefield efficiency by permitting supervised autonomous operations, and serve to reduce force manpower and support requirements. Telerobotic technologies are under development that enable the performance of missions in hazardous chemical and radiation environments and in situations where there is an explosive hazard or when NBC weapons might be present. Those projects having direct application to countering NBC paramilitary and terrorist threats include: i) the Remote Ordnance Neutralization System (RONS), designed to complement or augment EOD operations; ii) the Tactical Unmanned Vehicle (TUV), an organic, unmanned vehicle designed to provide U.S. forces with general reconnaissance, surveillance, and target acquisition support, including chemical vapor and other hazards detection; and iii) the Robotic Excavation Vehicle System (REVS) and the Basic Unexploded Ordnance Gathering System to detect, recover, and dispose of unexploded ordnance. Key accomplishments in these areas include: i) began EMD of RONS (RONS transfers to the Joint Service EOD program in FY 1998.); ii) completed an MoU with an operational EOD unit to improve the developer - user interface as part of the REVS project; and iii) completed a major UGV technology demonstration during which three vehicles operating cooperatively successfully conducted reconnaissance, surveillance, and target acquisition activities. Additional project details are provided in Table 8.1 and in Appendix C (Table C.9).

8.4 DOE Activities and Programs for Nuclear Emergency and Terrorism Response

DOE maintains several emergency response assets postured to respond to terrorist or other incidents involving nuclear weapons or devices. DOE conducts analyses and provides operational and technical support in response to nuclear emergency and terrorism events worldwide. DOE's threat assessment process consists of an evaluation of nuclear threats from technical, operational, and behavioral standpoints. The assessment is integrated into the decision process for deployment of operational assets. The emergency response asset with primary responsibility for responding to acts of nuclear terrorism is the NEST. NEST provides operational and technical support for resolution of incidents or accidents involving nuclear materials and can be deployed anywhere in the world under the authority of the lead federal agency (i.e., the FBI for operations within the U.S. and the Department of State for overseas operations). This national resource of skilled personnel and specialized equipment, which can be called upon as needed, is built on DOE's nuclear weapons design and production expertise. These resources are the most effective national assets to locate, identify, assess, and disable nuclear weapons and devices. Such devices include, for example, improvised nuclear devices with the potential to produce a nuclear yield as well as radiological dispersal devices which could be used to spread radioactive contamination.

DOE's recently initiated CBNP technology development program (described in Section 6.2) will provide direct support to future capabilities for countering and responding to CW/BW terrorist threats. The four thrust areas of fundamental biology, prediction, detection, and mitigation are focused on improving capabilities to detect and identify CW/BW agents; understanding and predicting the flow and concentration of CW/BW agents; and providing cost-effective, environmentally benign decontamination technologies (e.g., suitable for use in urban environments). DOE's integrated program to prevent or detect nuclear smuggling also plays a

significant role in countering possible terrorist activities involving nuclear weapons or devices. DOE works closely with others in the interagency community, providing technology support for the detection and interdiction of illicit nuclear material. Efforts to secure nuclear material at its source and detect illicit nuclear material in transit will help to reduce the number of potential terrorist incidents.

8.5 U.S. Intelligence Activities and Programs Related to Countering NBC Terrorism

The reader is referred to the Intelligence Annex for information on these activities and programs.

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9. CPRC Findings and Recommendations

9.1 The Integrated Response to Countering Proliferation

Table 9.1 summarizes the integrated programmatic response of DoD and DOE in addressing the counterproliferation ACEs. Key organizations are matched to the ACE priorities they address. For simplicity, the ACEs are listed by DoD priority. The programmatic response of U.S. Intelligence is discussed in the Intelligence Annex. Considerable R&D and acquisition activities are underway in each ACE priority area by multiple DoD Agencies (including through the Chemical and Biological Defense Program (CBDP) and the Counterproliferation Support Program (CPSP)), OSD, the Services, Joint Staff, and DOE.

Table 9.1: Integrated Response to Addressing the Counterproliferation ACEs

Counterproliferation ACE	Key DoD and DOE Programs to Counter Proliferation*
1. Detection, Identification, and Characterization of BW Agents	<ul style="list-style-type: none"> • DoD: CBDP, CPSP, DARPA and Joint Service Programs • DOE: Chemical Biological Nonproliferation Program (CBNP)
2. Detection, Characterization, and Defeat of NBC/M Facilities with Minimal Collateral Effects	<ul style="list-style-type: none"> • DoD: DSWA, CPSP, and Air Force Programs • DOE: Production Detection R&D Program
3. Detection, Characterization, and Defeat of Underground Facilities with Minimal Collateral Effects	<ul style="list-style-type: none"> • DoD: DSWA, CPSP, and Joint Service Programs • DOE: Production Detection R&D Program
4. Theater Ballistic Missile Active Defense	<ul style="list-style-type: none"> • DoD: BMDO, Service, DARPA, and Joint Staff Programs
5. Support for Special Operations Forces and Defense Against Paramilitary, Covert Delivery, and Terrorist NBC Threats	<ul style="list-style-type: none"> • DoD: OSD, Joint Service, DSWA, and CPSP Programs • DOE: Nuclear Emergency/Terrorism Response and CBNP Programs
6. Provide Consequence Management	<ul style="list-style-type: none"> • DoD: OSD, Joint Service, and CPSP Programs • DOE: Nuclear Emergency/Terrorism Response and CBNP Programs
7. Cruise Missile Defense	<ul style="list-style-type: none"> • DoD: DARPA, BMDO, Service, and Joint Staff Programs
8. Collection, Analysis, and Dissemination of Actionable Intelligence to Counter Proliferation	<ul style="list-style-type: none"> • DoD: DARPA, Joint Service, and CPSP Programs • DOE: Intelligence Programs
9. Robust Passive Defense to Enable Sustained Operations on the NBC Battlefield	<ul style="list-style-type: none"> • DoD: CBD, Joint Service, DSWA, DARPA, and CPSP Progs. • DOE: CBNP Program
10. BW Vaccine RDT&E and Production to Ensure Stockpile Availability	<ul style="list-style-type: none"> • DoD: CBD and JVAC Programs
11. Target Planning for NBC/M Targets	<ul style="list-style-type: none"> • DoD: DSWA, DARPA, Joint Service, and CPSP Programs
12. Prompt Mobile Target Detection and Defeat	<ul style="list-style-type: none"> • DoD: DARPA, Air Force, and CPSP Programs
13. Detection, Tracking, and Protection of NBC/M and NBC/M-Related Materials and Components	<ul style="list-style-type: none"> • DoD: Navy, OSD, and CPSP Programs • DOE: Diversion/Smuggling Detection R&D and MPC&A Programs
14. Support Export Control Activities of the U.S. Government	<ul style="list-style-type: none"> • DoD: OSD, DTSA, and CPSP Programs • DOE: Nuclear Export Controls Program
15. Support Inspection and Monitoring Activities of Arms Control Agreements and Regimes	<ul style="list-style-type: none"> • DoD: OSIA, CTR, DSWA, OSD, and Air Force Programs • DOE: Nuclear Test Monitoring and NPT Regime Programs

* U.S. Intelligence programs are discussed in the Intelligence Annex

9.2 Integrated Shortfalls and Areas for Progress

Table 9.2 summarizes key DoD and DOE capability shortfalls and candidate areas for progress to address these shortfalls for each of the counterproliferation ACEs. While no claim of completeness should be inferred from these lists, they are indicative of the CPRC's concerns in meeting its responsibility to ensure the development and deployment of highly effective technologies and capabilities in support of U.S. counterproliferation and counterterrorism policy.

9.3 Findings and Recommendations

The CPRC finds, as evidenced by the numerous program and activity accomplishments cited in the report, that the seriousness of NBC/M proliferation and NBC terrorist threats, and the need to enhance capabilities to counter them, are recognized throughout DoD (including OSD, the Joint Staff, Services, and CINCs), DOE, and U.S. Intelligence. Indeed, "countering proliferation" is an established and institutionalized priority within each of the CPRC-represented organizations. These efforts reflect the President's firm commitment to stem NBC/M proliferation and counter NBC terrorism. Much has been done, but much remains to do. Moreover, as decision makers, policy makers, and warfighters continue to reprioritize their nonproliferation, counterproliferation, and counterterrorism policy and strategy objectives, the CPRC will continue to review related DoD, DOE, and U.S. Intelligence activities and programs to ensure that they continue to meet evolving needs. The CPRC's recommendations for 1997 are summarized in Figure 9.1 and discussed below.

The FY 1998 President's budget addresses priority programs for countering NBC/M proliferation and NBC terrorism. *Therefore, the CPRC recommends that the FY 1998 President's budget for each of the CPRC-represented organizations be authorized and appropriated by the Congress.*

Countering proliferation and NBC terrorism are challenges that will have to be addressed for the foreseeable future. Although the activities and programs proposed in the FY 1998 budget will continue to produce substantial progress in national capabilities to counter NBC/M proliferation and NBC terrorist threats, areas of capability shortfall will remain. *Therefore, the CPRC directs each represented organization to continue to address nonproliferation, counterproliferation, and NBC terrorism needs and requirements as high priority items in their FY 1999 and out-year budgets.*

In light of the CPRC's finding that the need to enhance U.S. national capabilities to counter proliferation has become established and institutionalized within the DoD, DOE, and U.S. Intelligence, the CPRC has not identified specific programmatic options for FY 1999. The CPRC expects the normal budget development processes of each CPRC-represented organization to be adequate to ensure a robust, integrated program for countering proliferation. However, key areas for progress addressing certain specific aspects of the ACE priorities have been identified for special consideration during budget development activities (listed in Table 9.2).

Table 9.2: DoD and DOE Capability Shortfalls and Areas for Progress

DoD ACE Priority	Capability Shortfalls	Areas for Progress
1. Detection, Identification, and Characterization of BW Agents	<ul style="list-style-type: none"> • Rapid early warning and identification of BW agents 	<ul style="list-style-type: none"> • Remote/early warning identification and improved detector sensitivity/selectivity • Agent nonspecific detectors
2. Detection, Characterization, and Defeat of NBC/M Facilities with Minimal Collateral Effects	<ul style="list-style-type: none"> • Adverse weather precision standoff attack • Counterforce effectiveness and multiple attack options (surgical strike to non-lethal functional kill) with minimal collateral effects 	<ul style="list-style-type: none"> • All-weather precision standoff weapons and enhanced lethality payloads • Improved detection/characterization, functional kill, and agent defeat concepts
3. Detection, Characterization, and Defeat of Underground Facilities with Minimal Collateral Effects	<ul style="list-style-type: none"> • Counterforce effectiveness against deeply buried and tunneled targets • Location and characterization of underground targets • Identification of functional vulnerabilities • See also ACE priority 2 and 8 entries 	<ul style="list-style-type: none"> • Improved penetrating munitions • Remote sensors for target and geology characterization • Improved target functional analysis • See also ACE priority 2 and 8 entries
4. Theater Ballistic Missile Active Defense*	<ul style="list-style-type: none"> • NBC warhead sure kill and collateral effects mitigation • Probability of threat missile intercept and leakage 	<ul style="list-style-type: none"> • Concepts to reduce leakage • Warhead lethality enhancement • Agent defeat warheads/devices
5. Support for Special Operations Forces and Defense Against Paramilitary, Covert Delivery, and Terrorist NBC Threats	<ul style="list-style-type: none"> • Detection and safing of NBC weapons and devices • Neutralization of NBC/M infrastructure elements with minimal collateral effects • Risk to SOF personnel 	<ul style="list-style-type: none"> • CW/BW agent defeat devices • Specialized assault/breach equipment • SOF standoff/remote capability • Improved NBC detection and transport modeling in urban environment
6. Provide Consequence Management	<ul style="list-style-type: none"> • NBC weapon effects prediction in urban environments • NBC decontamination in urban environments • Integrated federal, state, and local agency operations • Medical response 	<ul style="list-style-type: none"> • Improved modeling • Non-corrosive decon. techniques • Rapid mass casualty triage and care • Integrated operations and training
7. Cruise Missile Defense	<ul style="list-style-type: none"> • Attack early warning and leakage • Post-engagement NBC collateral effects mitigation 	<ul style="list-style-type: none"> • Counter low observables detection • Agent defeat weapons/devices
8. Collection, Analysis, and Dissemination of Actionable Intelligence to Counter Proliferation	<ul style="list-style-type: none"> • Prediction and identification of proliferation activities • Prediction and assessment of NBC/M delivery force order of battle and operations • Location and characterization of underground facilities 	<ul style="list-style-type: none"> • High fidelity proliferation pathway analysis and prediction tools • Wide area underground facility detection
9. Robust Passive Defense to Enable Sustained Operations on the NBC Battlefield	<ul style="list-style-type: none"> • Detection and warning of CW/BW contamination of food and water and prepositioned equipment • NBC protection for civilian port workers • NBC decontamination for fixed sites, ports, and airfields and for sensitive equipment • Availability of collective protection shelters 	<ul style="list-style-type: none"> • Unattended protection, detection, and warning concepts • Low cost civilian protection gear • Improved efficiency protective gear • Nonaqueous and wide area decon. • Improved, low cost collective protection
10. BW Vaccine RDT&E and Production to Ensure Stockpile Availability	<ul style="list-style-type: none"> • Lack of FDA-approved BW defense vaccines • Time required for FDA licensure • Stockpile availability for noncombatants • Protection against multiple BW agents and strains 	<ul style="list-style-type: none"> • Broad spectrum vaccines • Provisions for emergency/expedited FDA approval of BW vaccines
11. Target Planning for NBC/M Targets	<ul style="list-style-type: none"> • Centralized planning to support multiple counterforce options 	<ul style="list-style-type: none"> • "NBC-smart" targeting tools
12. Prompt Mobile Target Detection and Defeat	<ul style="list-style-type: none"> • Identification and track of NBC/M forces • Rapid response targeting, standoff detection, and strike 	<ul style="list-style-type: none"> • Target "finger printing" and data fusion • Tags and high sensitivity NBC sensors • Unmanned strike options
13. Detection, Tracking, and Protection of NBC/M and NBC/M-Related Materials and Components	<ul style="list-style-type: none"> • Security costs • Reliability/motivation of foreign security personnel • Wide area, continuous surveillance 	<ul style="list-style-type: none"> • Reliable automation and telepresence • Improved foreign MPC&A • Improved unattended sensors
14. Support Export Control Activities of the U.S. Government	<ul style="list-style-type: none"> • Detection of NBC/M and related components • Proliferation prediction and trends analysis 	<ul style="list-style-type: none"> • Rapid and reliable detection concepts • Improved analysis tools
15. Support Inspection and Monitoring Activities of Arms Control Agreements and Regimes	<ul style="list-style-type: none"> • Treaty implementation costs • Remote/standoff monitoring capabilities • Support for nonproliferation, IAEA sample analysis, and accountability of alternate nuclear materials 	<ul style="list-style-type: none"> • Improved automation of monitoring and inspection routines • Enhanced sensor systems and monitoring instrument integration • Additional sample analysis laboratories • Resolution of alternate nuclear materials technical issues

* National Missile Defense is associated with this ACE. (See discussion in Section 2.2.)

Recommendations of the CPRC

1997

- **Approve the President's FY 1998 Budget for the CPRC-Represented Organizations Addressing Key Priorities in Countering Proliferation and NBC Terrorism**
- **Continue to Address the Needs and Requirements for Countering Proliferation and NBC Terrorism as High Priority Items in Annual Budget Development Processes**
- **Continue Close Coordination of R&D and Acquisition Activities and Programs among DoD, DOE, and U.S. Intelligence, including establishing:**
 - validation standards for NBC hazard prediction models
 - an integrated R&D plan for advanced hyper-/ultra-spectral CW/BW detectors
 - an integrated R&D and acquisition plan for unattended ground sensors to improve developer coordination and user acceptance
- **Improve Coordination with the NPAC TWG**
- **Increase International Cooperative Efforts by Expanding Existing Activities to Counter Global NBC/M Proliferation and Terrorist Threats**
- **Review and Reprioritize the Counterproliferation ACEs to Reflect Progress and Newly Emerging Priorities**

Figure 9.1 CPRC Recommendations for 1997

To continue the record of interdepartmental achievement through an integrated response to meeting the counterproliferation ACE priorities, *the CPRC recommends a continuation of the close coordination of counterproliferation-related R&D and acquisition activities and programs among DoD, DOE, and U.S. Intelligence.* To this end, the CPRC directs the CPRC Standing Committee to maintain the interorganizational coordination of R&D and acquisition activities and programs and provide the necessary management oversight to ensure that the integrated response of DoD, DOE, and U.S. Intelligence in meeting the ACE priorities, that has characterized their cooperation to date, continues.

The CPRC has identified three specific areas where improved interorganizational coordination can improve the efficiency, cost-effectiveness, and responsiveness of R&D and acquisition activities:

- *Establish "validation standards" for nuclear, biological, and chemical dispersion and hazard prediction models and designate a lead agency for implementation.* The

importance, interest, and expertise in this area transcends departmental boundaries. A core working group from the CPRC-represented organizations is already being formed.

- *Establish an integrated cooperative R&D plan for advanced state-of-the-art hyper-/ultra-spectral sensors for chemical and biological detection* to improve coordination and synergize the efforts of various ongoing R&D activities of the CPRC-represented organizations.
- *Establish an integrated R&D and acquisition plan for unattended ground sensors to improve cooperation within the developer community and enhance prospects for user acceptance* and “buy-in” of this maturing technology. An MoU between DoD and the intelligence community’s Central MASINT Office has been signed; inclusion of DOE is in process.

Because the NPAC TWG and the CPRC share similar goals and objectives for reducing the threat of NBC/M proliferation and terrorism, *the CPRC directs the CPRC Standing Committee to improve coordination and information sharing between its activities and those of the NPAC TWG and explore the possibility of joint cooperative efforts.*

Recognizing the global nature of NBC/M proliferation and NBC terrorist threats, *the CPRC recommends increasing international cooperative efforts to counter these threats by expanding existing cooperative activities in R&D, proliferation prevention, and counterterrorism being conducted by DoD, DOE, and U.S. Intelligence.* To expedite and more efficiently and effectively meet the challenges posed by these global problems, the CPRC continues to encourage and endorse cooperation with our international partners through joint activities and programs, including international information sharing conferences addressing the threats of NBC/M proliferation and terrorism.

The CPRC, through its Standing Committee, will continue to review and update the counterproliferation ACEs, reprioritizing them as required. This process is central to ensure that the ACEs continue to reflect the integration of CINC warfighting priorities and the overarching national security policy and strategy objectives they support. Updated and relevant ACEs assist the CPRC in meeting its program review responsibilities, while improving the focus of future programmatic and managerial efforts among the CPRC-represented organizations to counter NBC/M proliferation and NBC terrorist threats.

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APPENDICES

- A. Statutes Establishing the CPRC and Its Reporting Requirements
- B. CPRC Program Review Participants
- C. Summary of Key DoD Activities and Programs Strongly Related to Counterproliferation
- D. Planned FY 1998 Budget Profile for DOE Programs Related to Countering Proliferation
- E. Listing of Acronyms and Abbreviations
- **Intelligence Annex** (bound separately)

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APPENDIX A

Statutes Establishing the CPRC and Its Reporting Requirements

NATIONAL DEFENSE AUTHORIZATION ACT FOR FISCAL YEAR 1994

(as amended)

[Pub. L. No. 103-160, sec. 1605, 107 Stat. 1845 (1993), as amended by Pub. L. No. 103-337, sec. 1502, 108 Stat. 2914 (1994)]

SEC. 1605. JOINT COMMITTEE FOR THE REVIEW OF COUNTERPROLIFERATION PROGRAMS OF THE UNITED STATES

(a) ESTABLISHMENT: (1) There is hereby established a Counterproliferation Program Review Committee composed of the following members:

- (A) The Secretary of Defense.
- (B) The Secretary of Energy.
- (C) The Director of Central Intelligence.
- (D) The Chairman of the Joint Chiefs of Staff.

(2) The Secretary of Defense shall chair the committee. The Secretary of Energy shall serve as Vice Chairman of the committee.

(3) A member of the committee may designate a representative to perform routinely the duties of the member. A representative shall be in a position of Deputy Assistant Secretary or a position equivalent to or above the level of Deputy Assistant Secretary. A representative of the Chairman of the Joints Chiefs of Staff shall be a person in a grade equivalent to that of Deputy Assistant Secretary of Defense.

(4) The Secretary of Defense may delegate to the Under Secretary of Defense for Acquisition and Technology the performance of the duties of the Chairman of the committee. The Secretary of Energy may delegate to the Under Secretary of Energy responsible for national security programs of the Department of Energy the performance of the duties of the Vice Chairman of the committee.

(b) PURPOSES OF THE COMMITTEE: The purposes of the committee are as follows:

- (1) To optimize funding for, and ensure the development and deployment of
 - (A) highly effective technologies and capabilities for the detection, monitoring, collection, processing, analysis, and dissemination of information in support of United States counterproliferation policy; and
 - (B) disabling technologies in support of such policy.
- (2) To identify and eliminate undesirable redundancies or uncoordinated efforts in the development and deployment of such technologies and capabilities.

(3) To establish priorities for programs and funding.

(4) To encourage and facilitate interagency and interdepartmental funding of programs in order to ensure necessary levels of funding to develop, operate, and field highly-capable systems.

(5) To ensure that Department of Energy programs are integrated with the operational needs of other departments and agencies of the Government.

(6) To ensure that Department of Energy national security programs include technology demonstrations and prototype development of equipment.

(c) DUTIES: The committee shall

(1) identify and review existing and proposed capabilities and technologies for support of United States non-proliferation policy and counterproliferation policy with regard to --

- (A) intelligence;
- (B) battlefield surveillance;
- (C) passive defenses;
- (D) active defenses; and
- (E) counterforce capabilities;

(2) prescribe requirements and priorities for the development and deployment of highly effective capabilities and technologies;

(3) identify deficiencies in existing capabilities and technologies;

(4) formulate near-term, mid-term, and long-term programmatic options for meeting requirements established by the committee and eliminating deficiencies identified by the committee; and

(5) assess each fiscal year the effectiveness of the committee actions during the preceding fiscal year, including, particularly, the status of recommendations made during such preceding fiscal year that were reflected in the budget submitted to Congress pursuant to section 1105(a) of title 31, United States Code, for the fiscal year following the fiscal year in which the assessment is made.

(d) ACCESS TO INFORMATION: The committee shall have access to information on all programs, projects, and activities of the Department of Defense, the Department of State, the Department of Energy, the intelligence community, and the Arms Control and Disarmament Agency that are pertinent to the purposes and duties of the committee.

(e) RECOMMENDATIONS: The committee shall submit to the President and the heads of all appropriate departments and agencies of the Government such programmatic recommendations regarding existing, planned, or new programs as the committee considers appropriate to encourage funding for capabilities and technologies at the level necessary to support United States counterproliferation policy.

(f) TERMINATION OF COMMITTEE: The committee shall cease to exist at the end of September 1996.

NATIONAL DEFENSE AUTHORIZATION ACT FOR FISCAL YEAR 1995

[Pub. L. No. 103-337-337, sec. 1503, 108 Stat. 2916 (1994)]

SEC. 1503. REPORTS ON COUNTERPROLIFERATION ACTIVITIES AND PROGRAMS.

(a) **REPORT REQUIRED.** (1) Not later than May 1, 1995, and May 1, 1996, the Secretary of Defense shall submit to Congress a report of the findings of the Counterproliferation Program Review Committee established by subsection (a) of the Review Committee charter.

(2) For purposes of this section, the term "Review Committee charter" means section 1605 of the National Defense Authorization Act for Fiscal Year 1994 (Public Law 103-160), as amended by section 1502.

(b) **CONTENT OF THE REPORT.** Each report under subsection (a) shall include the following:

(1) A complete list, by specific program element, of the existing, planned, or newly proposed capabilities and technologies reviewed by the Review Committee pursuant to subsection (c) of the Review Committee charter.

(2) A complete description of the requirements and priorities established by the Review Committee.

(3) A comprehensive discussion of the near-term, mid-term, and long-term programmatic options formulated by the Review Committee for meeting requirements prescribed by the Review Committee and for eliminating deficiencies identified by the Review Committee, including the annual funding requirements and completion dates established for each such option.

(4) An explanation of the recommendations made pursuant to subsection (c) of the Review Committee charter, together with a full discussion of the actions taken to implement such recommendations or otherwise taken on the recommendations.

(5) A discussion and assessment of the status of each Review Committee recommendation during the fiscal year preceding the fiscal year in which the report is submitted, including, particularly, the status of recommendations made during such preceding fiscal year that were reflected in the budget submitted to Congress pursuant to section 1105(a) of title 31, United States Code, in the fiscal year of the report.

(6) Each specific Department of Energy program that the Secretary of Energy plans to develop to initial operating capability and each such program that the Secretary does not plan to develop to initial operating capability.

(7) For each technology program scheduled to reach initial operational capability, a recommendation from the Chairman of the Joint Chiefs of Staff that represents the views of the commanders of the unified and specified commands regarding the utility and requirement of the program.

(c) **FORMS OF REPORT.** Each such report shall be submitted in both classified and unclassified forms, including an annex to the classified report for special compartmented information, special access programs, and special activities programs.

SEC. 1607. DEFINITIONS.

For purposes of this subtitle:

(1) The term "appropriate congressional committees" means —

(A) the Committee on Armed Services, the Committee on Appropriations, the Committee on Foreign Relations, and the Select Committee on Intelligence of the Senate; and

(B) the Committee on Armed Services, the Committee on Appropriations, the Committee on Foreign Affairs, and the Permanent Select Committee on Intelligence of the House of Representatives.

(2) The term "intelligence community" has the meaning given such term in section 3 of the National Security Act of 1947 (50 U.S.C. 401a).

NATIONAL DEFENSE AUTHORIZATION ACT FOR FISCAL YEAR 1997

[Pub. L. No. 104-201, sec. 1309, 110 Stat. 2710 (1996)]

SEC. 1309. COUNTERPROLIFERAION PROGRAM REVIEW COMMITTEE

(a) COMPOSITION OF THE COMMITTEE: Subsection 1605 of the National Defense Authorization Act for Fiscal Year 1994 (22 U.S.C. 2751 Note) is amended by adding at the end of the following new paragraph:

“(5) The Assistant to the Secretary of Defense for Nuclear and Chemical and Biological Defense Programs shall serve as executive secretary to the committee”.

(b) ADDITIONAL PURPOSE OF THE COMMITTEE: Subsection (b)(1)(A) of such section is amended by inserting “and efforts, including efforts to stem the proliferation of weapons of mass destruction and to negate paramilitary and terrorist threats involving weapons of mass destruction” after “counterproliferation policy”.

(c) FOUR-YEAR EXTENSION OF THE COMMITTEE: Subsection (f) of such section is amended by striking out “September 30, 1996” and inserting in lieu thereof “September 30, 2000”.

(d) REPORTS ON COUNTERPROLIFERATION ACTIVITIES AND PROGRAMS: Section 1503 of the National Defense Authorization Act for Fiscal Year 1995 (22 U.S.C. 27561 note) is amended –

(1) in subsection (a) –

(A) by striking out “REPORT REQUIRED.– (1) Not later than May 1, 1995 and May 1, 1996, the Secretary” and inserting in lieu thereof “ANNUAL REPORT REQUIRED. – Not later than May 1 of each year, the Secretary”; and

(B) by striking out paragraph (2); and

(2) by adding at the end of the following new subsections:

“(d) REVIEW COMMITTEE CHARTER DEFINED. – For purposes of this section, the term ‘Review Committee charter’ means section 1605 of the National Defense Authorization Act for Fiscal Year 1994 (22 U.S.C. 2751 note).

“(e) TERMINATION OF REQUIREMENT. – The final report required under subsection (a) is the report for the year following the year in which the Counterproliferation Program Review Committee established under the Review Committee Charter ceases to exist.”

APPENDIX B

CPRC Program Review Participants

- **CPRC Principals**

Dr. John P. White - CPRC Chairman, Deputy Secretary of Defense

Mr. Charles B. Curtis - CPRC Vice Chairman, Deputy Secretary of Energy

Dr. Harold P. Smith, Jr. - CPRC Executive Secretary, Assistant to the Secretary of Defense
for Nuclear and Chemical and Biological Defense Programs

Dr. Gordon Oehler - Special Assistant to the Director of Central Intelligence for
Nonproliferation

RADM Scott A. Fry, USN - Deputy Director for Strategy and Policy, Joint Chiefs of Staff
(J-5)

- **CPRC Standing Committee**

Dr. Harold P. Smith, Jr., Chairman - Assistant to the Secretary of Defense for Nuclear and
Chemical and Biological Defense Programs

Mr. Ken Baker, Vice Chairman - Director, Office of Nonproliferation and National Security,
Department of Energy

Dr. Gordon Oehler - Special Assistant to the Director of Central Intelligence for
Nonproliferation

RADM Scott A. Fry, USN - Deputy Director for Strategy and Policy, Joint Chiefs of Staff
(J-5)

Mr. H. Allen Holmes - Assistant Secretary of Defense for Special Operations/Low-Intensity
Conflict

- **Other Senior Participants**

Dr. Gordon Adams - Office of Management and Budget

CAPT Pat Casey, USN - Joint Staff (J-5) and Deterrence/Counterproliferation Joint
Warfighting Capability Assessment (JWCA) Team

Mr. Robert C. Doheny - Director for Acquisition, Office of the Assistant Secretary of
Defense for Special Operations/Low-Intensity Conflict

Mr. Frank Miller - Acting Assistant Secretary of Defense for International Security Policy

Col Ellen M. Pawlikowski, USAF - Deputy for Counterproliferation, Office of the Assistant
to the Secretary of Defense for Nuclear and Chemical and Biological Defense
Programs

Mr. Michael Potter - DCI Nonproliferation Center

Mr. Robert E. Waldron - Director (Acting), Office of Research and Development, Office of Nonproliferation and National Security, Department of Energy

Dr. Mitch Wallerstein - Deputy Assistant Secretary of Defense for Counterproliferation Policy

• **CPRC Action Officers**

Ms. Alane Andreozzi-Beckman - Counterproliferation Program Office, Defense Special Weapons Agency

Mr. Greg Bogut - Office of the U.S. Army Deputy Chief of Staff for Operations and Plans, Strategic Plans and Policy Division

Dr. Salvatore Bosco - Special Assistant for Chemical/Biological Matters, Office of the Assistant to the Secretary of Defense for Nuclear and Chemical and Biological Defense Programs

Mr. Jerry Burke - Office of the Deputy Assistant Secretary of Defense for Intelligence and Security

CPT Michele Burkhardt, USA - Joint Staff (J-5)

Dr. Millie Donlon - Program Manager, Biological Weapon Defense, Defense Advanced Research Projects Agency

LtCol Ken Firoved, USMC - U.S. Marine Corps

Mr. Mark Flohr - Counterproliferation Program Office, Defense Special Weapons Agency

Col Harrison Freer, USAF - Executive Assistant to the Deputy for Counterproliferation, Office of the Assistant to the Secretary of Defense for Nuclear and Chemical and Biological Defense Programs

Lt Col Michael Glaspy, USAF - Counterproliferation Analysis and Response, Office of the Deputy Assistant Secretary of Defense for Counterproliferation Policy

Mr. Chuck Gonzales - Office of the Assistant Secretary of Defense for Command, Control, Communications and Intelligence

CDR Randy Grimm, USN - Nuclear Deterrence/Counterproliferation Joint Mission Area Working Group Chairman (OPNAV N87D1)

Maj Max Hanessian, USAF - Strategy and Concepts, Policy Division, U.S. Air Force (AF/XONP)

Dr. Elisa Harris - National Security Council

Dr. Gregory Henry - Office of Management and Budget

LTC Leonard Izzo, USA - Department of the Army, Office of the U.S. Army Deputy Chief of Staff for Operations and Plans, Chemical and NBC Defense Division

Mr. Kenneth Keating - On-Site Inspection Agency, Interagency Affairs

MAJ Tim Moshier, USA - Joint Program Office for Biological Defense

CPT Edward Mount, USA - On-Site Inspection Agency, Interagency Affairs

LTC Jim Murphy, USA - Joint Staff

Mr. David Newsom - DCI Nonproliferation Center

Dr. Gloria Patton - Assistant for Chemical/Biological Matters, Office of the Assistant to the Secretary of Defense for Nuclear and Chemical and Biological Defense Programs

Lt Col Jim Player, USAF - Strategy and Concepts, Policy Division, U.S. Air Force (AF/XONP)

Mr. Rick Rhoads - Department of the Army, Office of the U.S. Army Deputy Chief of Staff for Operations and Plans, Chemical and NBC Defense Division

Mr. Richard Soskin - Defense Technology Security Administration

Dr. Gary Stradling - Special Assistant for Counterproliferation, Office of the Assistant to the Secretary of Defense for Nuclear and Chemical and Biological Defense Programs

Mr. Charles Swett - Office of the Assistant Secretary of Defense for Special Operations/Low-Intensity Conflict

Dr. Ann Vopatek - Principal Assistant for Special Projects, Ballistic Missile Defense Organization

Lt Col Mike Williams, USAF - Office of the Assistant Secretary of Defense for Special Operations/Low-Intensity Conflict

Mr. Alan Yuriditsky - Defense Intelligence Agency

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APPENDIX C

Summary of Key DoD Activities and Programs Strongly Related to Counterproliferation

Introduction. In the tables that follow, the Counterproliferation Support Program (Table C.1) and the Chemical and Biological Defense Program (Table C.2) are summarized along with other key Service (Tables C.3 - C.5), DoD Agency (Tables C.6 - C.8 and C.10 - C.12), OSD (Table C.9), and Joint Staff (Table C.13) activities and programs strongly related to counterproliferation. The summaries include: program/project title, program description, program accomplishments, key program milestones, relevant DoD counterproliferation ACE priorities, program/project executing agencies, FY 1998 budget figures, and Program Element (PE) number. It should be noted that detailed program descriptions, including project accomplishments, milestones, and plans are provided to Congress annually as part of the President's Budget. Accomplishments and milestones cited in the following tables represent selected highlights rather than an exhaustive characterization of counterproliferation-related activities and programs.

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Table C.1: Counterproliferation Support Program Projects

Program/Project Title	Project Description	Project Accomplishments	Key Milestones	DoD ACE	Agency	FY 98 Budget [SM]	PE No.
Proliferation Prevention • Joint DoD/FBI Proliferation Prevention Program	<ul style="list-style-type: none"> Adapt DoD technology and training expertise to enhance capabilities of foreign law enforcement agencies in stemming proliferation at its source Data collection, research, and analysis in support of proliferation prevention 	<ul style="list-style-type: none"> Prepared training materials for courses to be given to law enforcement agencies in Uzbekistan and Kazakhstan 	<ul style="list-style-type: none"> Conduct the first counterproliferation training course in June 1997 Conduct training assessments and prepare courses for additional FSU states Continue to train foreign law enforcement agencies in Eastern Europe and the Baltics 	13, 14	OSIA	.*	605160D
• Integrated Proliferation Prevention and Open Source Monitoring	<ul style="list-style-type: none"> Assessments of reliability, safety, surety, and sustainability of the nuclear stockpile 	<ul style="list-style-type: none"> Research and analysis contract awarded 	<ul style="list-style-type: none"> Continue research and analysis Establish international norms for proliferation prevention 	13, 8	ATSD (NCB)	1.275	603160D
• Nuclear Matters Projects		<ul style="list-style-type: none"> Continue DoD oversight of DOE stockpile stewardship; advisory support to Secretary of Defense Prepared annual Nuclear Weapons Deployment Request to President 	<ul style="list-style-type: none"> Continue management and oversight support activities 	5, 2, 3	ATSD (NCB)	1.914	605160D
Strategic/Tactical Intelligence • High Frequency Active Auroral Research Project (HAARP)	<ul style="list-style-type: none"> Single source transmission of long wavelength electromagnetic waves for underground structure detection 	<ul style="list-style-type: none"> Completed installation and began testing of prototype transmitter Completed initial field tests imaging known underground structure 	<ul style="list-style-type: none"> Collect field data and conduct "blind" imaging test 4QFY97 Activate full-power operational facility and demonstrate global imaging capability FY00 	3, 8	Air Force	0**	603160D
Battlefield Surveillance • Tactical FLIR Sensor Project	<ul style="list-style-type: none"> Improved BDA of NBC/M and underground facilities UAV sensor integration assessment 	<ul style="list-style-type: none"> Developed design options, initiated proof-of-principle demonstrations of system modifications, and collected imagery to improve and support weapon delivery testing 	<ul style="list-style-type: none"> Design, develop, and flight test modified LANTIRN pods 3QFY97-1QFY98 Participate in CP1 ACTD demonstrations FY98 	2, 3, 8	DSWA Air Force	3.500	603160D
• Tactical UGS System (TUGS) Project	<ul style="list-style-type: none"> Continuous surveillance, target characterization, and BDA of NBC/M and underground facilities 	<ul style="list-style-type: none"> Continued data collection from representative facilities during weapon detonations to evaluate performance and demonstrate utility Constructed and field tested a brassboard TUGS system 	<ul style="list-style-type: none"> Phase II configuration brassboard TUGS acceptance testing 3QFY97-1QFY98 Operational TUGS available 1QFY98 Participate in CP2 ACTD Residual equipment available to CINCS 2QFY98 	2, 3, 8	DSWA DOE	4.200	603160D

* Work continues on this program using funds authorized and appropriated in prior years. Although no funds were specifically identified for the program in the President's FY 1998 budget request, DoD may seek to reprogram funds as needed to continue work on the program.

** Currently, no FY 1998 funds are budgeted for this Congressional Special Interest Program.

Table C.1: Counterproliferation Support Program Projects (continued)

Program/Project Title	Project Description	Project Accomplishments	Key Milestones	DoD ACE	Agency	FY 98 Budget (\$M)	PE No.
• Tactical Multi-Sensor Data Fusion	• RDT&E to support NBC/M and underground target characterization and BDA	• Conducted user demonstrations and training	• Validation with WBS and FLIR data and full-up validation tests 1QFY98	2, 3, 8, 11	DSWA DARPA	0.750	603160D
Counterforce							
• Collateral Effects Phenomenology Assessment	• Source term characterization and transport prediction, phenomenology experiments, and assessment tool development	• Fielded HASCAL ver 1.0 • Accurate prediction of atmospheric transport of hazard plumes during CP1 ACTD demos	• Integrate HPAC ver 3.0 into IMEA FY98 • CP1 ACTD demonstration support FY98 • Integrate HPAC ver 4.0 into IMEA FY99	2, 3, 11	DSWA	8.000	603160D
• Advanced Weapon Systems (AUP, HTSF, WBS, and ITAG)	• Development of enhanced penetrating munition for hard and underground target defeat offering expanded compatibility with delivery platforms and an all-weather capability	• Demonstrated controlled weapon penetration depth using HTSF • Integration of GBU-24/HTSF with F-15E and F/A-18 • Scale testing of WBS line payout • ITAG software simulation and initial hardware fabrication	• Complete WBS flight testing 1QFY98 • CP1 ACTD demonstration tests FY98 • Deliver AUP/HTSF to Services 2QFY98	2, 3	DSWA Air Force DOE	12.600	603160D
• NBC/M Target Planning and Response/Vulnerability Assessment	• Experimental and analytical analyses of target response/vulnerability and automated target planning for NBC/M facilities	• Developed and validated models for conventional weapons effects against hard and buried targets • Fielded IMEA ver 2.0 to EUCOM and continued modeling support for contingency operations	• Release IMEA ver 3.0 1QFY98 • CP1 ACTD demonstration support FY98 • Release IMEA ver 4.0 1QFY99	11, 2, 3, 5	DSWA	5.475	603160D
• Counter-proliferation ACTDs	• Integrated operational testing to support early deployment of new counterforce capabilities against NBC/M and underground targets	• Completed integrated sensor, weapons, and planning tool demonstrations of the CP1 ACTD • Conducted static detonation and live weapon drops on simulated BW storage facility	• Complete CP2 ACTD planning FY97 • Complete CP1 ACTD demonstrations FY98 • Deliver CP1 residual capabilities to CINC EUCOM FY98-99 • Conduct CP2 demonstrations FY98-02	2, 3, 11, 8	DSWA EUCOM	10.579	603160D
Passive Defense							
• JBREWS ACTD	• Accelerate fielding of war-fighting capabilities for remote detection, identification, characterization, and early warning of BW agent attacks	• CINC EUCOM and CINC CENTCOM sponsors identified USD(A&T) approval and management plan under development • Technical architecture and concept studies under way	• Systems definition and analysis 4QFY97 • Preliminary Design Review 2QFY98 • Critical Design Review 1QFY99 • Conduct field demonstrations FY00 • EMD transition FY00	1, 9, 8	JPO-BD	17.770	603884BP
• Eye Safe LR-BSDS for BW Detection	• Accelerated deployment of airborne eye safe IR lidars for standoff battlefield BW aerosol detection and track	• System design completed • Program restructured to accommodate reduced funding • Full laser power demonstrated	• Milestone II for two prototypes 4QFY97 • IOC and Milestone III for 4 systems 4QFY99 • First Unit Equipped FY99 • Transition to procurement FY00	1, 9	JPO-BD Army	13.744	603884BP

Table C.1: Counterproliferation Support Program Projects (continued)

Program/Project Title	Project Description	Project Accomplishments	Key Milestones	DoD ACE	Agency	FY 98 Budget [SM]	PE No.
• JWARN Demonstration and Integration	• Demonstrate technology to integrate and communicate NBC hazard information	• Demonstrated automated reporting • Initiated development of back-track location • 3 FOWG units delivered to CBIRF; demonstrated improved detector • Successful bench test of Mass Spectrometer • Conducted biological background sampling at Osan, Korea	• Demonstrate in Air Base/Port Bio Detection ACTD FY97 • Participate in field trials FY98	1, 9	JPO-BD	1.000	603384BP
• BW Detection Advanced Technology Development	• Demonstration and rapid fielding of selected man-portable and UAV-integrated BW detectors for remote detection and characterization of BW agents	• Integrated CW/BW sensors and software upgrades into CBSS • Tested prototype BW Detection Kit • Completed Escape Hood market survey and assessment • User implementation of CW/BW EOD suit	• Mass Spectrometer prototype field testing 4QFY98 • Detector testing as part of JBREWS ACTD FY99 • Establish BW detection test bed 1QFY98	1, 9	JPO-BD DARPA NRL	6.845	603384BP
<u>Counter Paramil/Terrorist Threats</u> • First Responder Support	• Accelerated development of capabilities and technologies to enhance interagency response to CW/BW threats	• Integrated CW/BW sensors and software upgrades into CBSS • Tested prototype BW Detection Kit • Completed Escape Hood market survey and assessment • User implementation of CW/BW EOD suit	• Complete user field trials of BW Detection Kit 2QFY98 • Deliver 6 Chem./Bio. Sentry Systems (CBSS) 1QFY98	6, 5	SOCOM	1.200	603160D
• Specialized SOF Technologies and Prototype Devices	• Develop technologies adapted for SOF use to enhance capabilities to detect, access, disable, render safe, and recover NBC devices and improve NBC target defeat, mobility, and access capabilities • Operational plans and exercises and readiness sustainment training against NBC devices	• Testing and evaluation of fielded SFAL prototype • Delivery of FOWG BW detectors to CBIRF • Completed fieldable prototype drill extractor for CW/BW sample retrieval • Conducted readiness sustainment programs for EOD units • Delivered equipment suites to EOD units	• Deliver 4 extraction tool training prototypes 1QFY98; P31 in FY99 • Deliver 4 prototype FOWG BW detectors 4QFY97; P31 in FY98-00 • SFAL CDR 3QFY97; deliver prototypes 4QFY98; P31 FY99-00 • Deliver WMD Containers: Ph. I 2QFY98; Ph. II 1QFY99; Ph. III 4QFY99	5	SOCOM	10.029	603160D
• Joint EOD Readiness Sustainment	• Operational plans and exercises and readiness sustainment training against NBC devices	• Conducted readiness sustainment programs for EOD units • Delivered equipment suites to EOD units	• Continue readiness sustainment training • Continue forward deployment of equipment and capabilities • Conduct shortfall assessments	5	SOCOM Navy	0.656	603160D
<u>CP Architecture Studies and Management/Oversight</u>	• Analysis, architecture, and technical studies; integrated planning; and management and oversight support for ATSD(NCB)	• Preparation of CPORC annual reports to Congress • Supported 1996 Counterproliferation Study • Manage Counterproliferation Support Program	• Continue program management and oversight support activities, technical analyses, program planning, and integrated architecture studies • Continue preparation of annual reports to Congress	1, 2, 3, 5, 6, 9, 11, 13	ATSD (NCB) DSWA	5.133	605160D
• Total:						104.670	

Table C.2: Chemical and Biological Defense Program

Program/Project Title	Project Description	Project Accomplishments	Key Milestones	DoD ACE	Agency*	FY 98 Budget [M]	PE No.
Passive Defense • Chemical/Biological Defense (Non-Medical)	• Basic research in chemistry, life sciences, and physics in support of CW/BW defense	• Conducted a coordinated and consolidated mass spectrometric study of biomarkers having potential utility in a future mass spectrometry based biotectors	• Basic Research	1, 9	Army	2.301	601384BP
• Medical Chemical Defense Basic Research	• Basic research on medical countermeasures to chemical agents	• Expanded pathophysiological database on sulfur mustard; used microdialysis models to fully characterize time course of neurochemical changes in nerve agent seizures; used "quadromas" fusion products to produce binding site modification on catalytic antibodies to detoxify nerve agents	• Basic Research	9	Army	8.133	601384BP
• Medical Biological Defense: Basic Research	• Basic research on the development of drugs and vaccines for BW defense	• Determined mode of action of aerosolized ricin and staphylococcus enterotoxin B; examined molecular biology, genetics, and pathophysiological mechanisms of anthrax and brucellosis; determined mechanisms of immunity to plague and additional bacterial threats	• Basic Research	9, 10	Army	14.756	601384BP
• Chemical/Biological Defense: Applied Research	• Numerous activities including CW/BW detection and warning, individual and collective protection, decontamination, and modeling support	• Conducted modeling and simulation of Fixed Base Operations and investigated the compatibility of Joint Service CW/BW defense technologies with Air Force operations	• Transition first candidate material to JSLIST P31 FY98 • Upgrade wargames and simulations to enable evaluation of virtual prototypes of CW/ BW defense equipment FY98	9, 1	Army	35.133	602384BP
• Medical Biological Defense: Applied Research	• Exploratory development of drugs and vaccines for BW defense	• Determined optimal expression systems for multivalent vaccine candidates for the staphylococcal enterotoxins • Evaluated pharmacological and immunological prophylaxes for candidate therapeutic selections for botulinum toxins	• Continue applied research on products to protect against or treat plague, brucellae, SEB, VEE/EEE/WEE, ricin toxin, and viral agents FY98	9, 10	Army	11.474	602384BP
• Medical Chemical Defense: Applied Research	• Exploratory development of treatments for CW agent casualties	• Determined efficacy of calcium chelators to protect against sulfur mustard and intracellular calcium effects • Determined new assays to quantify DNA damage	• Continue applied research on skin decontamination, nerve agent countermeasures, and diagnostic technologies	9	Army	13.416	602384BP
• Medical Biological Defense: Advanced Technology Development	• Advanced technology development in support of BW vaccine and drug development and vaccine production	• Conducted pre-clinical testing of improved anthrax vaccine for Milestone I transition • Evaluated pharmacological prophylaxis and developed vaccine candidate expression system and a Good Manufacturing Practice level product for botulinum toxins • Investigated safety and efficacy of vaccine candidates for brucella and plague in animal models	• Transition plague vaccine to Dem/Val FY98 • Complete vaccine MS IIs for: Q-fever and smallpox ('99), ricin ('00), VEE/botulinum ('01), combined VEE/WEE/EEE/plague ('03), and brucellosis ('04)	10, 9	Army JPO-BD	13.860	603384BP

* All Chemical and Biological Defense Program projects are funded through DoD-wide accounts and are generally Joint Service programs. The lead Service or Agency executing the project is listed.

Table C.2: Chemical and Biological Defense Program (continued)

Program/Project Title	Project Description	Project Accomplishments	Key Milestones	DoD ACE	Agency	FY 98 Budget (\$M)	PE No.
• Medical Chemical Defense: Life Support	<ul style="list-style-type: none"> Advanced technology development investigating new medical countermeasures for CW agents 	<ul style="list-style-type: none"> Screened 40 candidate antivesicant compounds in cell viability assays and 30 candidate compounds in the nicotinamide adenine dinucleotide depletion assay Finalized animal models to support advanced screening requirements for candidate antivesicant compounds 	<ul style="list-style-type: none"> Perform toxicity and reactivity studies for vesicant pre-treatments FY98 Complete MS 0 for reactive topical skin protectant FY99 	9	Army	9.673	603384BP
• Chemical/Biological Defense Systems Advanced Technology Development	<ul style="list-style-type: none"> Technology demos in CW/BW agent detection/identification, decontamination, and individual/collective protection 	<ul style="list-style-type: none"> Demonstrated technologies in wide area detection using chemical imaging sensors, low level atmospheric monitoring using mini CBMS, and small lightweight detectors using ion mobility spectrometry and surface acoustic waveguides 	<ul style="list-style-type: none"> Complete remotely deployed integrated BW early warning network FY98 Demonstrate fixed site lidar CW defense system FY98 	9, 1	Army	9.845	603384BP
• Contamination Avoidance: Dem/Val	<ul style="list-style-type: none"> Dem/Val of CW and BW detection technology 	<ul style="list-style-type: none"> CBMS: conducted chemical profiling for NBCRS, Technical Feasibility Testing, and Production Proveout Testing; completed technical/logistics documentation JSLSCAD: prepared documentation and conducted MS II IPR; conducted simulant and live agent testing; obtained hardware and software redesigns; conducted interface trials with candidate transport systems 	<ul style="list-style-type: none"> Integrate JSLSCAD into NBCRS FY97 	9, 1	Army	0.145	603384BP
• Collective Protection: Dem/Val	<ul style="list-style-type: none"> Dem/Val of CW/BW collective protection technology 	<ul style="list-style-type: none"> AICPS: completed Engineering Design Review and Test (EDT) on filter; initiated prototype design and fabrication for Pre-Production Qualification Test/Initial Operational Test and Evaluation (PPQT/IOTE) 	<ul style="list-style-type: none"> Complete system integration and production performance specifications FY98 	9	Army	3.582	603384BP
• Decontamination: Dem/Val	<ul style="list-style-type: none"> Modular Decontamination System and advanced sorbent technology Dem/Val 	<ul style="list-style-type: none"> MDS: completed XM21 prototype testing; modified NDI and validated XM22 hardware through EDT 	<ul style="list-style-type: none"> Complete MDS PPQT and IOTE FY98 Integrate sorbent into M295 decontamination kit FY98 	9	Army	7.045	603384BP
• Medical Chemical Defense: Dem/Val	<ul style="list-style-type: none"> Advanced development and validation of pre-treatments and antidotes for CW agents and casualty decontamination 	<ul style="list-style-type: none"> Demonstrated human safety and technical performance of topical skin protectant and multichambered autoinjector; conducted animal toxicology studies for cyanide pretreatment 	<ul style="list-style-type: none"> Complete safety study for cyanide pretreatments FY98 Complete toxicity and efficacy evaluation of advanced anticonvulsant FY99 	9	Army	0.894	603384BP
• Medical Biological Defense: Dem/Val	<ul style="list-style-type: none"> Advanced development and validation of vaccines and drugs 	<ul style="list-style-type: none"> Began clinical and nonclinical studies to collect data supporting a change to FDA license for anthrax vaccine to reduce the number of shots for immunization 	<ul style="list-style-type: none"> Initiate production, safety, and efficacy testing of selected sero-types of botulinum toxin vaccines 	10	Army	10.051	603384BP
• Biological Defense: Dem/Val	<ul style="list-style-type: none"> Program definition and risk reduction for point and remote BW detection systems 	<ul style="list-style-type: none"> LR-BSDS P31 engineering development tests under way SR-BSDS CDR completed Modeling of JBREWS deployment concepts and architectures 	<ul style="list-style-type: none"> SR-BSDS prototype 4QFY97 Complete JBREWS architecture study 4QFY97 LR-BSDS P31 MSIII 4QFY99 	1, 9	JPO-BD	1.914	603384BP
• Collective Protection: EMD	<ul style="list-style-type: none"> NBC collective protection shelter development 	<ul style="list-style-type: none"> New program for shipboard collective protection 	<ul style="list-style-type: none"> Integrate high pressure fan and filter upgrades FY98 	9	Army	1.169	604384BP

Table C.2: Chemical and Biological Defense Program (continued)

Program/Project Title	Project Description	Project Accomplishments	Key Milestones	DoD ACE	Agency	FY 98 Budget (\$M)	PE No.
Contamination Avoidance: EMD	<ul style="list-style-type: none"> • EMD of NBC detection and warning systems (MICAD, SCAMP, IPDS, SALAD, JWARN, JCAD, ACADA, CBMS, and JSLSCAD) 	<ul style="list-style-type: none"> • MICAD: test system fabrication/inspection, system integration, and built prototype hardware • SCAMP: initiated fabrication of engineering development models and started Technical Evaluation • IPDS: supported fleet introduction and component development and testing • SALAD: continued Tech. Eval. and shipboard Operational Evaluation 	<ul style="list-style-type: none"> • MICAD: type classification and prepare documentation for production contract FY98 • SALAD: prepare documentation for production contract FY98 • CBMS: fabricate engineering prototypes FY98 	9, 1	Army	48.652	604384BP
Individual Protection: EMD	<ul style="list-style-type: none"> • EMD for JSLIST, the EOD Ensemble, and the Naval Aircrew CW/BW NDI Respirator 	<ul style="list-style-type: none"> • JSLIST: continued and completed Integrated Developmental and Operational Testing of prototype ensembles • ACPM: resolved design issues, completed technical design package, built IOT&E hardware, completed logistics support, and conducted Milestone III IPR 	<ul style="list-style-type: none"> • Revise JSLIST specs. for technology insertion; verify production items FY99 • Support aircraft mods for AERP integration FY99 	9	Joint Service	6.023	604384BP
Medical Chemical Defense: EMD	<ul style="list-style-type: none"> • EMD of medical materials necessary to field medical defense capabilities 	<ul style="list-style-type: none"> • Evaluated extended stability of medical aerosolized antidote, convulsant antidote, and pyridostigmine pretreatment for nerve agents 	<ul style="list-style-type: none"> • Complete autoinjector FY98 • Type certification of collective protection shelter FY98 	9	Army	5.265	604384BP
Medical Biological Defense: EMD	<ul style="list-style-type: none"> • Vaccine EMD 	<ul style="list-style-type: none"> • Data collection to support changing FDA license for anthrax vaccine that would reduce the number of shots for protective immunization 	<ul style="list-style-type: none"> • Compile data for anthrax vaccine FDA license amendment • Prepare product license application for botulinum pentavalent vaccine FY97 	10, 9	Army	16.500	604384BP
Nonmedical BW Defense: EMD	<ul style="list-style-type: none"> • Detection of BW threats to provide early warning, including development of the Air Base/Port Bio Detection ACTD 	<ul style="list-style-type: none"> • BIDS: fabricated candidate P31 detection components • JBPDS: EMD proposals received and evaluated; contract award expected 3QFY97 • IBAD: completed rapid prototype fabrication and installed additional units aboard ships • LR-BSDS: completed design, conducted Critical Design Review and prepared Technical Design Package • SR-BSDS: completed design and conducted PDR • JBREWS: initiated program documents • ACTD: completed two major field trials of sensor/early warning network at Dugway Proving Ground 	<ul style="list-style-type: none"> • JBPDS: complete Block I suite design; initiate system integration; begin antibody development for 6 agents FY98 • ACTD: Initiate logistics support and fielding for CENTCOM and U.S. Forces Korea air base/port sites FY98 	1, 9	JPO-BD Army Navy	42.926	604384BP
Joint Chemical/Biological Contact Point and Test	<ul style="list-style-type: none"> • Repository of CW/BW information for multiple users 	<ul style="list-style-type: none"> • Initiated 6 assessments, 3 field trials, and 2 laboratory tests evaluating CW defense equipment to provide inputs to Services for doctrine, policy, and training procedures development 	<ul style="list-style-type: none"> • Management Support 	9	ATSD (NCB) Army	1.689	605384BP
Management Support	<ul style="list-style-type: none"> • Oversight and integration of CBD Program 	<ul style="list-style-type: none"> • Continued to perform program oversight, assessment, and policy development 	<ul style="list-style-type: none"> • Management Support 	9, 1, 10	Services	4.073	605384BP
Dugway Proving Ground	<ul style="list-style-type: none"> • Operation of test facilities 	<ul style="list-style-type: none"> • Maintaining test facility readiness 	<ul style="list-style-type: none"> • Management Support • Continue operations 	9, 1	Army	9.280	605384BP

Table C.2: Consolidated Chemical and Biological Defense Program (continued)

Program/Project Title	Project Description	Project Accomplishments	Key Milestones	DoD ACE	Agency	FY 98 Budget (\$M)	PE No.
Procurement • M40 Mask	• Procurement of M40 protective mask	• Continued procurement	• Production and Deployment	9	Army	6.075	0300D, BA3 M99601
• PATS	• Protection Assessment Test System procurement	• Continued procurement	• Production and Deployment	9	Army	5.546	0300D, BA3 M95801
• ICAM	• Improved Chemical Agent Monitor	• Continued procurement	• Production and Deployment	9	Army	9.777	0300D, BA3 S02201
• FOX NBCRS	• FOX NBC Recon. System	• Continued procurement	• FUE by 2QFY98 • Production and Deployment	9, 1	Army	26.788	0300D, BA3 MA0601
• Pocket Radiac	• Compact radiation measuring device	• Continued procurement	• FUE by 1QFY99 • Production and Deployment	9	Army	3.345	0300D, BA3 B96801
• Chem/Bio Protective Shelters	• CBPS collective protection shelter	• Continued procurement	• FUE by 2QFY98 • Production and Deployment	9	Army	17.292	0300D, BA3 R12301
• Shipboard Detector Modifications	• Procurement of IPDS and SALAD	• Continued procurement	• Production and Deployment	9, 1	Navy	5.864	0300D, BA3 N00041
• BIDS P31	• Improvements to NDI BIDS	• Developmental and Operational Testing under way at Dugway Proving Ground	• Milestone IV decision 4Q97 • FUE by 4QFY99	1, 9	Army JPO-BD	41.341	0300D, BA3 M93001
• M45 Air Crew Protective Mask	• Procurement of the M45 mask	• Continued procurement	• Production and Deployment	9	Army	5.882	0300D, BA3 M99501
• Chem/Bio Respiratory System - Aircrew	• Provide USN/USMC air-crews with CW/BW respiratory protection	• Continued procurement	• Production and Deployment	9	Navy USMC	7.744	0300D, BA3 N00020
• AERP Aircraft Modifications	• Second generation CW/BW oxygen mask	• Continued procurement	• Production and Deployment	9	Air Force	1.439	0300D, BA3 JN0011
• ACADA, XM22 CW Detectors	• Procurement of ACADA	• Continued procurement	• Production and Deployment	9	Army	15.673	0300D, BA3 M98801
• Protective Clothing	• Procurement of JSLIST, EOD Ensemble, and Fire Fighters' Ensemble	• Continued procurement	• Production and Deployment	9	Services	35.089	0300D, BA3 MA0400
• Individual Protective Gear	• Initial outfitting of protective equipment for naval construction	• New procurement	• Production and Deployment	9	Navy	2.092	0300D, BA3
• Medical BW Defense: Vaccine Procurement	• Procurement of vaccines and medical products	• Completing anthrax vaccine stockpile • Initial studies to reduce anthrax vaccine production schedule	• JVAP prime systems contract award expected in FY97 • Approval of anthrax immunization plan	10, 9	JPO-BD Army	24.091	0300D, BA3 JX0005
Counter Paramil./Terrorist Threats • Anti-Terrorism Support	• Vulnerability assessments of DoD installations to CW/BW threats	• New program for FY 1998	• Continue vulnerability assessments of installations and training to counter CW/BW	5	Services	3.688	605384BP
• Total:						489.525	

Table C.3: Key U.S. Army Programs Strongly Related to Counterproliferation

Program/Project Title	Project Description	Project Accomplishments	Key Milestones	DoD ACE	Agency	FY 98 Budget [\$M]	PE No.
Active Defense							
• PATRIOT PAC-3 Procurement	• Procurement of 52 PAC-3 missiles, 11 PAC-3 launch stations, and 6 radar station modification kits	• Phase III radar station successfully tested during live fire exercises	• PAC-3 LRIP DAB 1QFY98	4, 7	Army	349.100	C49200 C50700 CA0267
• PATRIOT PAC-3 RDT&E	• RDT&E for the Remote Launch Communications Enhancement Unit, threat simulations, and P3I testing	• Completed RDT&E for the Remote Launch Communications Enhancement Unit	• Continue P3I system development and testing	4, 7	Army	12.388	203801A
• Missile Defense Systems Integration: Dem/Val	• Integrate, demonstrate, and validate critical systems to accomplish the TMD mission, including BMC4I systems • Support joint U.S./Israeli Nautilus/THEL ACTD	• Conducted systems analyses, studies, and experiments to integrate and validate TMD missions and functions of Systems upgrade and development of MDBIC synthetic combat environments and DIS interfaces • Development of the Synthetic Battlefield Environment • Nautilus/THEL ACTD development	• Develop virtual prototypes of potential battlefield systems to facilitate training and TMD integration • Complete THEL demonstrator integration and testing	4, 7	Army	24.138	603308A
• TMD BMC4I Procurement	• Provides JTIDS terminals for platform interoperability in support of TMD	• Ensured single configuration for all terminals	• Provide TMD interoperability for multiple platforms	4, 7	Army	20.100	208864C
Passive Defense							
• All Army Passive Defense Programs have been incorporated into the CBD Program (see Table C.2)							
• Total:						405.726	

Table C.4: Key U.S. Navy Programs Strongly Related to Counterproliferation

Program/Project Title	Project Description	Project Accomplishments	Key Milestones	DoD ACE	Agency	FY 98 Budget (\$M)	PE No.
Proliferation Prevention • SEI System Support Program	• Procurement and fleet integration of SEI system upgrades to aid in tracking NBC/M-related shipments	• Program transitions from Counterproliferation Support Program • Continued implementation into fleet by upgrading existing processors	• Fleet integration scheduled for FY 1999	13	Navy	1.626	204575N
Counterforce • Counterforce Hardened Target Munitions	• Develop advanced conventional earth penetrating warheads • Supports HDBTDC program	• Completed initial trade studies, including advanced control systems and DoD/DOE laboratory and industry concepts for advanced ordnance	• Optimize internal packaging, weaponize enhanced effects packages, and environmental qualification FY98	3, 2	Navy	4.987	604327N
Active Defense • USMC Hawk Procurement	• Procurement of the Marine Corps Hawk air defense system	• Completed 5 successful intercepts of ballistic missile targets • Declared IOC IQFY97	• Continue procurement of system upgrades	4, 7	Navy	3.475	procurement
• Navy Area TBMD Program	• Procurement of the Navy Area TBMD System	• Achieved first intercept with modified SM-2 Block IV interceptor • Approved for EMD by the DAB	• Field UOES prototype FY99 • FUE FY01	4, 7	Navy	15.400	procurement
Passive Defense • Navy Radiac Program	• RDT&E and procurement of radiation detection and monitoring equipment for Navy and Marine Corps applications	• Production of Multifunction Radiac Underwater Radiac EMD • Initiated LRIP for laser dosimeter • EOD dosimeter in production	• Achieve IOC for Multifunction Radiac, Underwater Radiac, EOD dosimeter, and laser dosimeter	9	Navy	3.030	603542N
Counter Paramilit./Terrorist Threats • Joint Service EOD Systems Program	• Specialized EOD equipment to locate, access, and render safe explosive devices, including NBC devices, for all Services	• Initial development of "main charge disrupter" and lightweight charge disrupter to neutralize explosive devices • Continued development of an improved ordnance locator system	• Initiate production for the Advanced Radiographic System FY98 • EMD for charge disrupters • Continue RONS projects	5	Navy ASD (SO/LIC)	4.720	603654N
• Joint Service EOD Procedures Program	• Tests and validates prototype EOD systems and develops specialized procedures for EOD units • Funds DTRG technical support unit	• Maintained DTRG readiness • Developed countermeasure procedures for improvised nuclear devices • Continued development of EOD procedures for foreign and U.S. ordnance	• Continue render safe procedures development for U.S. and foreign ordnance and improvised nuclear devices • Continue DTRG support	5, 6	Navy ASD (SO/LIC)	6.613	604654N
• Marine Corps CBIRF	• USMC unit dedicated to managing the consequences of incidents involving CW/BW release	• Unit stood up in April 1996 • Supported Olympic Games in Atlanta • Assembled group of consulting experts to support deployments	• Finalize Ops. Requirements Document FY97 • Participate in 911-BIO ACTD 3QFY97	6	USMC	20.200	O&M
• Total:						60.051	

Table C.5: Key U.S. Air Force Programs Strongly Related to Counterproliferation

Program/Project Title	Project Description	Project Accomplishments	Key Milestones	DoD ACE	Agency	FY 98 Budget (\$M)	PE No.
Proliferation Prevention • Nuclear Detonation Detection System	• Integrates and supports nuclear detonation detection sensors on GPS satellites; develops and procures ground system for nuclear detonation reporting	• Integrated new sensors on GPS Block IIR satellites • Developed and tested ground segment processing and display system hardware and software	• Complete software to process Block IIR sensor data • Complete sensor deliveries for next generation GPS Block IIF satellite integration	15	Air Force	14.145 9.155	305913F procurement
Strategic/Tactical Intelligence • HAARP Project Support	• Exploratory hardware development and operational support	• Program supplemented by Counterproliferation Support Program	• See Table C.1	3, 8	Air Force	0*	602601F
• Remote Optical Sensing Program	• Aircraft based long range lidar for remote sensing of NBC weapons production signatures	• Demonstrated 20 km detection range	• Flight testing to validate 20 km detection range	8, 1	Air Force DIA	0.800	602601F
Counterforce • Hard and/or Deeply Buried Target Defeat Capability: Hard Target Munitions Dem/Val	• Joint Service evaluation and development of hard and/or deeply buried target defeat capabilities (see also Tables C.4 and C.8)	• Collected weapons system concepts from industry and DoD/DOE labs • Baseline concepts analyzed and assessment of alternatives framework and study plan developed • ACTD working group formed	• Milestone I approval 3QFY98 • Transition to EMD 4QFY01 • Production and initial fielding 4QFY04	3, 2 11, 8, 5	Services DSWA DIA OSD	4.981	603311F 604327F (Joint Service PE pending)
• Agent Defeat Weapon Program	• Develop capabilities and munitions concepts to defeat or neutralize BW/CW agents and their delivery systems	• Collected concepts from industry and DoD/DOE labs; baseline concepts analyzed • Assessment of alternatives framework/study plan developed • ACTD working group formed	• Milestone I approval 4QFY99 • Transition to EMD 4QFY03 • Production and initial fielding 4QFY06	2, 4, 12, 11	Air Force DOE	0.500	604222F
Active Defense • Airborne Laser (ABL) Program	• Integration of laser, optical, tracking, and related BMC41 systems into ABL aircraft for demonstration of ballistic missile boost phase intercept	• Completed active tracking, laser power, and chemical efficiency tests • Demonstrated beam control functionality and multi-beam illuminator concept • Measured 747 aircraft in-flight vibration and completed turret wind tunnel tests • Milestone I achieved and Dem/Val contract awarded	• Initial test prototype FY98 • Conduct intercept demo FY02 • Complete Program Definition and Risk Reduction and transition to EMD FY03 • Complete EMD FY05 • 3 aircraft IOC FY06 • Full operational capability (7 aircraft) FY08	4, 7	Air Force	157.136	603319F

* Currently, no FY 1998 funds are budgeted for this Congressional Special Interest Program.

Table C.5: Key U.S. Air Force Programs Strongly Related to Counterproliferation (continued)

Program/Project Title	Project Description	Project Accomplishments	Key Milestones	DoD ACE	Agency	FY 98 Budget (\$M)	PE No.
• Theater Missile Defense (R&D) Program	• R&D integration to improve BMC41 and counterforce operations to defeat theater missile capabilities and their supporting infrastructure elements	<ul style="list-style-type: none"> • Demonstration of Link-16 range extension and integration of TMD message set on AWACS • Development of IPB methodology and automated application tools; completion of country studies • Completion of the Defensive Planning Module and the Time Critical Targeting Aid • Completion of expert missile tracker prototype 	<ul style="list-style-type: none"> • Integrate Link-16 TMD message set on JSTARS and Air Force C3 aircraft • Demonstrate improved JSTARS ATR and Moving Target Indication capability • Demonstrate TMD Smart Sensor/ATR with LANTIRN pod upgrade 	4, 12, 8, 7	Air Force	29.182	208060F
• Space Sensor and Satellite Communication Technology	• Surveillance sensor and threat warning technology RDT&E in support of TMD and NMD	<ul style="list-style-type: none"> • Characterization of first large format IR array and demonstration of a two color focal plane array • Fabrication of an IR camera testbed for testing large staring arrays 	<ul style="list-style-type: none"> • Deliver 2 color mercury-cadmium-tellurium array • Develop large format multispectral quantum well detector • Investigate hyperspectral potential 	4, 7	Air Force	1.498	603401F
• Total:						217.397	

Table C.6: Key BMDO Programs Strongly Related to Counterproliferation

Program/Project Title	Project Description	Project Accomplishments	Key Milestones	DoD ACE	Agency	FY 98 Budget (\$M)	PE No.
Active Defense • PATRIOT PAC-3	• Continue missile EMD, remote launch, communications development, and testing	• Continued system procurement and fabrication • Conducted flight tests and achieved successful target intercept • Procurement transitioned to Army	• Begin formal flight testing of PAC-3 missile • Configuration 2 IOC FY97 • Begin LRIP FY98 • FUE 4QFY99	4, 7	BMDO	206.057	604865C
• Navy Area TBMD System	• Modify Navy Standard Missile and AEGIS combat system (ACS) to enable endoatmospheric theater ballistic missile engagement	• Conducted Milestone II DAB review • Conducted EMD flight tests and successful target kill • Procurement transitioned to Navy	• Complete CDR FY98 • DT/OT FY99-02 • Ship-deployed UOES FY99 • FUE FY01	4, 7	BMDO	267.822	604867C
• THAAD System	• Conduct flight testing and Dem/Val program development and transition to EMD for this land-based theater-wide TMD system	• Completed 7 flight tests with radar operating as primary sensor • Organized first battery; all UOES equipment available, except missiles • Data gathered to support modeling and simulation validation	• Complete flight testing for Dem/Val and EMD FY98 • Full UOES FY00 • LRIP FY02 • Production and FUE FY05	4	BMDO	294.647 261.480	603861C 604861C
• Navy Theater-Wide TBMD System	• Development of ship-based, theater-wide defense system based on leveraging the Navy Area TBMD program and further modifying the AEGIS, Standard Missile, and Vertical Launch System	• Completed system flight demonstrations, including LEAP flight tests • Continued advanced AEGIS operational capability demonstrations • Planning under way to establish as Navy procurement program	• Conduct pre-EMD flight test • 3 rd stage hover tests FY97-98 • Initial intercept FY00 • Begin ATD flight tests FY01	4	BMDO	194.898	603868C
• MEADS	• Supports international teaming and project definition and validation of a short range TMD and advanced air defense system	• Completed MoU with Germany and Italy for project definition/validation • Established National Project Office and NATO MEADS Management Agency • Commenced project definition/validation phase with 2 international industry teams	• Conduct system requirements and design reviews FY97-98 • Downselect winning design FY99; design and development FY99-03 • Production by FY05	4, 7	BMDO	47.956	603869C
• Joint TMD Dem/Val	• Integration of TMD family of systems, including Joint data collection, validation, and analysis for TMD technologies, components, systems, and programs • Joint BMC4I integration, network testing, and development	• Designed, developed, and maintained tools for measuring performance of core systems, advanced sensors, risk reduction, readiness, threat, counter-measures, and advanced BMC4I initiatives/architecture • Integrated upgraded capabilities into Air Force, Army, and Navy systems	• Continue data collection, evaluation, and integration support for core systems	4, 7	BMDO	542.619	603872C

Table C.6: Key BMDO Programs Strongly Related to Counterproliferation (continued)

Program/Project Title	Project Description	Project Accomplishments	Key Milestones	DoD ACE	Agency	FY 98 Budget (\$M)	PE No.
• National Missile Defense (NMD)	• System development, test and deployment planning for NMD	<ul style="list-style-type: none"> Continued implementation of deployment readiness program shortening IOC to 3 years from deployment start Designated as MDAP Established NMD Joint Program Office and RFP for lead system integrator released to industry Integrated Deployment Plan drafted 	<ul style="list-style-type: none"> System downselects FY98 Integrated systems test FY99 Deployment review FY00 (MS II if no deployment) Prepare acquisition justification for deployment FY00 	4	BMDO	504.091	603871C
• Boost Phase Intercept	• Development of boost phase defense concepts for TMD, including the Israeli Boost Intercept System (IBIS) and development of Joint Service UAV-based concepts	<ul style="list-style-type: none"> Cooperative participation with Israeli industry on IBIS risk mitigation UAV-based concept development under way through tri-Service IPTs 	<ul style="list-style-type: none"> UAV-based boost phase intercept requirements definition FY97 IBIS risk mitigation final report FY99 	4	BMDO	12.885	603870C
• Support Technology, Exploratory and Advanced Development	<ul style="list-style-type: none"> Innovative Science and Technology, Small Business Innovative Research, and Technology Transfer Programs Technology applications and Historically Black Colleges and Universities/Minority Institutions Program 	<ul style="list-style-type: none"> Advanced technology development to support TMD and NMD Main thrusts include advanced sensor, interceptor, and directed energy technologies and missile defense phenomenology data collection and analysis Demonstrated space-based characterization of midcourse engagement signatures via MSX experiment Conducted high power laser test 	<ul style="list-style-type: none"> Continue investment in key technologies Award Phases I and II SBIRs Continue program as mandated by law 	4, 7	BMDO	101.932 147.557	602173C 603173C
• Totals:						2,581.944	

Table C.7: Key DARPA Programs Strongly Related to Counterproliferation

Program/Project Title	Project Description	Project Accomplishments	Key Milestones	DoD ACE	Agency	FY 98 Budget (\$M)	PE No.
Counterforce/Battlefield Surveillance <ul style="list-style-type: none"> • Surveillance Sensor and Exploitation Systems Program 	<ul style="list-style-type: none"> • Develop sensors to defeat camouflage, concealment, and deception practices, including foliage penetrating radars • Provide near real-time, semi-automated exploitation of wide area imagery to track critical mobile targets 	<ul style="list-style-type: none"> • Developed FOPEN radar concept and verified system requirements for airborne demonstrator • Demonstrated ultra-wideband antenna design and automatic target recognition, detection, and cueing • Transitioned target recognition algorithms into the SAIP ACTD • Initiated development of next-generation ATRs 	<ul style="list-style-type: none"> • SAIP ACTD demos 1QFY98 • Develop FOPEN airborne demonstrator radar and demonstrate multi-spectral image exploitation using SAIP architecture FY98 • FOPEN radar CDR 3QFY98 • Demonstrate automatic target cueing, vehicle classification, and false alarm mitigation techniques • Demonstrate next generation ATR 	12, 8, 2, 3	DARPA	81.600	603762E
Information Integration Systems Program	<ul style="list-style-type: none"> • Development of an integrated, all-source, geographically referenced battlefield knowledge base and information distribution system for enhanced, real-time situation assessment and intelligence dissemination 	<ul style="list-style-type: none"> • Completed integration of a single intelligence source correlator • Demonstrated functionality of the global broadcast service and information servers for rapid dissemination of imagery products 	<ul style="list-style-type: none"> • Demonstrate multi-intelligence correlators for signals, text, and imagery • Demonstrate warfighter's associate for direct broadcast of and flexible access to large data and product servers • Demonstrate enhanced automated information management capabilities • Implement flexible information fusion architecture for joint interoperability across operations and systems 	12, 8, 2, 3	DARPA	96.424	603760E
Active Defense <ul style="list-style-type: none"> • Air Defense Initiative 	<ul style="list-style-type: none"> • Development of technologies for low cost defenses against cruise missiles, theater ballistic missiles, and UAVs and for air-directed defense architectures 	<ul style="list-style-type: none"> • Demonstrated Mountain Top surveillance radar and a fire control radar • Mountain Top radar transitioned to the Navy for further development • Tested space-time adaptive processing algorithms • Initiated low cost cruise missile defense studies 	<ul style="list-style-type: none"> • Transition space-time adaptive algorithms to USN/USAF • Demonstrate air-directed surface-to-air missile architecture • Design components for low cost cruise missile defense 	7, 4	DARPA	18.100	603762E

Table C.7: Key DARPA Programs Strongly Related to Counterproliferation (continued)

Program/Project Title	Project Description	Project Accomplishments	Key Milestones	DoD ACE	Agency	FY 98 Budget [\$M]	PE No.
<u>Passive Defense</u> • BW Defense Program	• Basic research to develop and demonstrate technologies that will minimize impact of BW agents on future military operations	• Deposition of BW simulant antibodies on a chip using photolithography • Developed medical protocol software tool for BW defense training and tested anthrax version • Demonstrated million-fold reduction of virus in bloodstream using modified red blood cells	• Develop advanced miniaturized point detectors for BW agents • Extend combat informatics program to BW defense • Develop BW medical countermeasures emphasizing multi-agent approaches	1, 9	DARPA	61.600	602383E
• Totals:						257.724	

Table C.8: Key DSWA Programs Strongly Related to Counterproliferation

Program/Project Title	Project Description	Project Accomplishments	Key Milestones	DoD ACE	Agency	FY 98 Budget (\$M)	PE No.
Proliferation Prevention <ul style="list-style-type: none"> Nuclear Arms Control/CTBT Verification Technology Program 	<ul style="list-style-type: none"> RDT&E of technologies to support CTBT implementation, compliance, and verification Provide enhanced nuclear safeguards 	<ul style="list-style-type: none"> Consolidated management of R&D programs under DSWA Continued development of global continuous threshold monitoring network and data fusion knowledge base Developed provisional modular laboratory for on-site analysis Developed CWC inspector training courses Fielded the Chemical Agent Management Information Network Developed improved CW sample extraction and preparation techniques Developed "masking" software for use with analytical instruments to protect non-CWC data Completed BW sampling analysis protocols and foreign BW program assessment 	<ul style="list-style-type: none"> All U.S. IMS monitoring stations operational FY99 Deliver IDC to CTBT international organization FY99 Entry-into-force expected; IMS and IDC operational FY00 Develop ruggedized, self-supporting on-site laboratory Adapt emerging analytical and sensor technologies for treaty verification Enhance "masking" software for analytical instruments Develop handheld detector for CWC inspectors Develop data management system to assist with BWC compliance and complete BW history and reference handbooks 	15	DSWA	56.299 1.701	603711H O&M
<ul style="list-style-type: none"> Chemical Arms Control Technology Program 	<ul style="list-style-type: none"> RDT&E support for implementation, verification, monitoring, and inspection technologies to support U.S. roles in global CW/BW arms control initiatives while protecting U.S. and DoD equities 	<ul style="list-style-type: none"> START Central Data System IOC Developed fieldable prototype Arms Control Verification Gravity Gradiometer 	<ul style="list-style-type: none"> Incorporate START II data reporting requirements into START Central Data System Implement Treaty Limited Item study results 	15	DSWA	9.589	603711H
<ul style="list-style-type: none"> START Verification Technology Program 	<ul style="list-style-type: none"> RDT&E of technologies to enable verification of START I, START II, and follow-on nuclear weapons treaties 	<ul style="list-style-type: none"> Completed initial tunnel portal attack assessments Completed tunnel MEA ver 1.0 	<ul style="list-style-type: none"> Release MEA for tunnels ver 2.0 FY99 Conduct tunnel attack field tests FY99-03 Deliver initial deliberate planning tool FY00 	3, 2, 11	DSWA	8.072	603711H
Counterforce <ul style="list-style-type: none"> Hard Target Defeat Program 	<ul style="list-style-type: none"> End-to-end evaluation and development of improved tactics and technologies for hard target characterization and defeat 				DSWA	13.202	602715H

Table C.8: Key DSWA Programs Strongly Related to Counterproliferation (continued)

Program/Project Title	Project Description	Project Accomplishments ^a	Key Milestones	DoD ACE	Agency	FY 98 Budget (\$M)	PE No.
• Weapons Systems Lethality Program	<ul style="list-style-type: none"> • Evaluation of conventional weapon lethality and effects and collateral effects assessment • Maintain core competency in nuclear weapons effects 	<ul style="list-style-type: none"> • Developed/validated models for combined weapons effects in support of the CP1 ACTD • Provided hazard assessment support to contingency operations 	<ul style="list-style-type: none"> • Update weapons lethality and collateral effects tools based on CP2 ACTD results FY99 • Integrate predictive tools into warfighter systems FY00 • Assess urban nuclear terrorism and covert ship delivery threats FY01 	2, 3, 5, 11	DSWA	18.807	602715H
Passive Defense • Test and Simulation Technology	<ul style="list-style-type: none"> • Simulators and simulator technology required to validate weapons systems operability in nuclear environments 	<ul style="list-style-type: none"> • Supported multiple Service test program requirements • Demonstrated technology and completed building and data acquisition system for the DECADE radiation simulator • Completed closeout of Aurora simulator facility 	<ul style="list-style-type: none"> • Continue to support system radiation test requirements • Complete DECADE qualification tests and hardware construction FY98 • Continue upgrades of radiation simulators 	9	DSWA	20.650	602715H
• Weapon System Operability Program	<ul style="list-style-type: none"> • Force survivability assessments against nuclear weapons effects based on test results 	<ul style="list-style-type: none"> • Completed Strategic Futures IV, TMD, and TW/AA assessments • Initiated operability assessment for STRATCOM in force direction, weapon systems, and C4ISR • Completed non-ideal airblast assessment for the Army Nuclear and Chemical Agency • Completed high integration density hardened memory • Demonstrated hardened optical imaging electronics 	<ul style="list-style-type: none"> • Complete operability assessments for TMD C31 systems FY97 • Complete force employment operability/connectivity assessment for STRATCOM FY98 • Complete initial NMD system architecture assessment FY98 • Complete non-ideal airblast tests on armored vehicles FY99 • Continue to develop hardened electronics 	9, 11, 4, 7	DSWA	7.380	602715H
Counter Paramil./Terrorist Threats • Force Protection Initiative	<ul style="list-style-type: none"> • Conduct force protection assessments, field assessment teams to identify and evaluate shortfalls, and develop an R&D support plan 	<ul style="list-style-type: none"> • Formed organization and developed CONOPS and assessment methodology • Conducted 3 assessments • Conducted symposium with industry to seek inputs to fulfill CINC and Service requirements 	<ul style="list-style-type: none"> • Complete 50 assessments in 1997 and 100 assessments by the end of 1998 • Define a prioritized technology R&D plan to address key force protection shortfalls 	5	DSWA	4.500	602715H
• Totals:						140.200	

Table C.9: Key OSD Programs Strongly Related to Counterproliferation

Program/Project Title	Project Description	Project Accomplishments	Key Milestones	DoD ACE	Agency	FY 98 Budget (\$M)	PE No.
Proliferation Prevention • DoD/U.S. Customs Proliferation Prevention Program	• Training and technical assistance to improve and expand efforts to prevent proliferation and acquisition of NBC/M and related materials in the FSU, Eastern Europe, and the Baltics	• Initiation of activities to assess needs and develop training programs • Completed initial interagency coordination activities	• Conduct initial training program in late FY97 • Prioritize future training for other countries	14, 13	ATSD (NCB) OSIA	3,000*	O&M
• Critical Technology Support Program	• Preparation of the <i>Militarily Critical Technologies List</i> (MCTL) to support export control activities • Identify and assess technologies which could assist in countering the proliferation of NBC/M	• Published MCTL Part I, Weapons Systems Technologies • Provided technical support to DoD and interagency processes in Wassenaar Arrangement and other NBC/M constraint arrangements	• Monitor and update MCTL to include both technologies that could be used by proliferants (Part II) and developing technologies that could assist in countering NBC/M proliferation (Part III)	14	DUSD (ICP)	2,690	605110D
Counter Proliferation/Terrorist Threats • Domestic Preparedness Initiative	• Improve NBC emergency response preparedness and coordination with state and local agencies through First Responder training, interagency exercises, and technical assistance	• New initiative	• Continue First Responder training and intergovernmental exercises to improve interagency response • Continue "WMD Hotline"	5, 6	ASD (SO/LIC)	49,500	pending
• Counterterror Technical Support Program	• Develop technical capabilities and prototype systems and concepts to detect, render safe, and defend against paramilitary and terrorist NBC threats	• Development of specialized access tools, explosives, nuclear materials detectors, enzyme decontaminants, and systems to suppress explosively dispersed CW/BW agents	• Complete development of a field-portable x-ray system for large volume explosives detection and a low cost disposable protective CW/BW mask	5, 6	ASD (SO/LIC)	29,087	603122D
• Consequence Management 911-BIO ACTD	• ACTD to enhance and integrate military capabilities to respond to terrorist/paramilitary use of BW	• "Fast-Track" ACTD approval • Management plan in process	• Conduct ACTD demonstrations 3QFY97 and 1QFY98	6, 5	ATSD (NCB)	.**	
• Joint Physical Security Equipment	• Consolidates DoD activities for facility and nuclear and other high value weapons protection equipment	• Performance tested and installed commercially available security systems at military bases and aboard ships	• Continue installation and upgrades of security systems at military facilities • Continue RDT&E activities	5	PDUSD (A&T/S&TS)	17,789	603228D

* Estimate based on congressional requirements to spend not more than \$9.0 million over 3 years.

** ACTD demonstrations will be completed in the first quarter of FY 1998 using FY 1997 dollars. FY 1998 funding, including funding for technology leave-behinds, has not been determined.

Table C.9: Key OSD Programs Strongly Related to Counterproliferation (continued)

Program/Project Title	Project Description	Project Accomplishments	Key Milestones	DoD ACE	Agency	FY 98 Budget (\$M)	PE No.
• SO/LIC Analytical Support	<ul style="list-style-type: none"> Research/analysis of technical, acquisition, and policy issues relating to special operations, counterterrorism, and unconventional warfare 	<ul style="list-style-type: none"> Supported DoD World-Wide Anti-terrorism Conference and the International Terrorism Response Awareness Program 	<ul style="list-style-type: none"> Continue support for ASD(SO/LIC) activities and programs 	5, 6	ASD (SO/LIC)	1.611	603122D
• Explosive Ordnance Disposal/Low-Intensity Conflict Program	<ul style="list-style-type: none"> Rapid prototyping effort to provide technology and equipment for the detection and neutralization of explosive devices 	<ul style="list-style-type: none"> Developed a light-sensitive ordnance locator and remote measuring device Continued development of an autonomous search vehicle 	<ul style="list-style-type: none"> Complete development of imaging ordnance locator FY98 Continue development of visualization methods and remote field disassembly of improvised explosive devices 	5	ASD (SO/LIC)	4.165	603122D
• Joint Robotics Program	<ul style="list-style-type: none"> Consolidates Service/DoD RDT&E efforts to demonstrate mature robotics technologies for EOD and other activities 	<ul style="list-style-type: none"> Began EMD of Remote Ordnance Neutralization System (RONS) Completed ATD for Unmanned Ground Vehicle (UGV) technology Completed MoU with EOD unit to improve user-developer interface 	<ul style="list-style-type: none"> RONS IOC FY99 Continue demonstration of UGVs for multiple missions 	5	PDUSD (A&T/S&TS)	16.399	603709D
• Totals:						124.241	

Table C.10: Key CTR Programs Strongly Related to Counterproliferation

Program/Project Title	Project Description	Project Accomplishments	Key Milestones	DoD ACE	Agency	FY 98 Budget (\$M)	PE No.
Proliferation Prevention <ul style="list-style-type: none"> • Destruction and Dismantlement 	<ul style="list-style-type: none"> • Assistance to FSU in the destruction and dismantlement of nuclear weapons, strategic delivery systems, and chemical munitions. 	<ul style="list-style-type: none"> • All nuclear warheads removed from Belarus, Ukraine, and Kazakhstan • 81 ICBMs dismantled • 64 SLBM launchers eliminated • 20 heavy bombers dismantled • Sealed 59 of 194 nuclear weapons test tunnels and bore holes at Russia's Delegen Mountain complex • Delivered 3 mobile chemical analytical labs in support of CW destruction 	<ul style="list-style-type: none"> • Complete Central Chemical Analytical Lab FY98 • Seal 194 nuclear test tunnels and bore holes FY99 • Dismantle 37 heavy bombers FY00 • Eliminate 497 ICBMs FY02 • Eliminate 548 SLBM launchers FY02 	15	ATSD (NCB)	210.000	FSU Threat Reduction
<ul style="list-style-type: none"> • Chain of Custody Programs 	<ul style="list-style-type: none"> • Design and manufacture of fissile material containers, support for a Russian fissile material storage facility, and improvement of weapons security in the FSU 	<ul style="list-style-type: none"> • Completed foundation for Mayak Fissile Material Storage Facility and delivered 10,000 fissile material containers • Initiated design and testing of Russian Reactor Core Conversion project • Delivered 117 rail car conversion kits to enhance physical security of nuclear weapons/warheads in transit 	<ul style="list-style-type: none"> • Complete Mayak Fissile Material Storage Facility FY00 • Deliver 24,000 fissile material containers FY98 • Complete conversion of weapons grade plutonium producing reactor FY99 	15	ATSD (NCB)	141.700	FSU Threat Reduction
<ul style="list-style-type: none"> • Demilitarization 	<ul style="list-style-type: none"> • Support for conversion of defense related industry and demilitarization of the nuclear weapons industry through elimination of physical infrastructure 	<ul style="list-style-type: none"> • Established 17 joint venture partnerships between U.S. companies and FSU defense enterprises formerly associated with NBC/M production • Over 15,000 former Soviet weapons scientists and engineers now employed on peaceful civilian projects • Defense Enterprise Fund established in 1994 	<ul style="list-style-type: none"> • Defense Enterprise Fund becomes self-sufficient and continues to support conversion of defense enterprises 	15	ATSD (NCB)	0	FSU Threat Reduction
<ul style="list-style-type: none"> • Other Program Support 	<ul style="list-style-type: none"> • Conduct training and exchange projects in the FSU to increase expertise in demilitarization • Administrative and logistical support to other CTR areas 	<ul style="list-style-type: none"> • Funded 117 exchanges between U.S. and FSU defense establishments • Conducted 28 audits and examinations of CTR program 	<ul style="list-style-type: none"> • Approximately 200 defense and military contacts planned for 1997 • 18 audits and examinations to be conducted in 1997 	15	ATSD (NCB)	30.500	FSU Threat Reduction
• Totals:						382.200	

Table C.11: Key OSIA Programs Strongly Related to Counterproliferation

Program/Project Title	Project Description	Project Accomplishments	Key Milestones	DoD ACE	Agency	FY 98 Budget (\$M)	PE No.
Proliferation Prevention • INF Treaty	<ul style="list-style-type: none"> • Inspections and inspection support under the terms of the Intermediate Range Nuclear Forces treaty 	<ul style="list-style-type: none"> • Treaty year 9 inspections ongoing 	<ul style="list-style-type: none"> • Continuation of treaty-related inspections 	15	OSIA	14.311	O&M
• START I Treaty	<ul style="list-style-type: none"> • Inspections and inspection support under the terms of START I 	<ul style="list-style-type: none"> • Baseline and treaty year 2 inspections completed successfully 	<ul style="list-style-type: none"> • Continuation of treaty year 3 inspections 	15	OSIA	21.001	O&M
• START II Treaty	<ul style="list-style-type: none"> • Planning and preparations for verification of START II 	<ul style="list-style-type: none"> • Senate gave advice and consent to ratify treaty in January 1996 	<ul style="list-style-type: none"> • Awaiting ratification of the treaty by the Russian Duma 	15	OSIA	9.276	O&M
• Nuclear Testing Treaties	<ul style="list-style-type: none"> • Monitoring and monitoring support of Threshold Test Ban Treaty and Peaceful Nuclear Explosions Treaty 	<ul style="list-style-type: none"> • Maintained a low state of readiness to deploy and monitor a Russian nuclear test 	<ul style="list-style-type: none"> • OSIA/DOE standdown of TTBT monitoring equipment 	15	OSIA	0.289	O&M
• Chemical Weapons Agreements	<ul style="list-style-type: none"> • Inspections and inspection support under the terms of CWC and Bilateral Destruction Agreement for verification and destruction of CW 	<ul style="list-style-type: none"> • Conducted numerous mock inspections and challenge inspection training exercises throughout CONUS 	<ul style="list-style-type: none"> • CWC entry-into-force April 29, 1997 • Bilateral Destruction Agreement: entry-into-force 2QFY99 	15	OSIA	34.771	O&M procurement
• Biological Weapons Agreements	<ul style="list-style-type: none"> • Inspection support under the terms of the BWC and BW Trilateral Agreement 	<ul style="list-style-type: none"> • Conducted staff assistance visits and mock inspections in the U.S 	<ul style="list-style-type: none"> • Support to BWC backstopping and BW agreement preparations 	15	OSIA	0.306	O&M
• Comprehensive Test Ban Treaty (CTBT)	<ul style="list-style-type: none"> • Proposed escort, security, and training functions for DoD/U.S. personnel and facilities 	<ul style="list-style-type: none"> • Provided technical advisory support to the CTBT Interagency Backstopping Group and on-site inspection support to the Verification Monitoring Task Force 	<ul style="list-style-type: none"> • Entry-into-force expected April 1998 	15	OSIA	1.014	O&M
• Safeguards, Transparency, and Irreversibility (STI) Program	<ul style="list-style-type: none"> • Mutual Reciprocal Inspections (MRI) and escort support associated with anticipated STI agreements 	<ul style="list-style-type: none"> • Escorted Russian team to Rocky Flats, LLNL, and ORNL for a technical exchange and to review MRI measurements 	<ul style="list-style-type: none"> • Escorted Russian team visit • Support DoD/DOE in plutonium reactor shutdown talks with Russia 	15	OSIA	2.428	O&M
• Other Programs: UNSCOM Operations in Iraq	<ul style="list-style-type: none"> • As executive agent for DoD, provides personnel, services, and equipment in support of UNSCOM 	<ul style="list-style-type: none"> • Provided support in enforcing UN Security Council Resolution 687 directing the destruction of Iraq's NBC/M infrastructure 	<ul style="list-style-type: none"> • Continued support to UNSCOM inspection and monitoring of Iraq's compliance with UN resolutions. 	15	OSIA	5.343	O&M
• Totals:						88.739	

Table C.12: Key DTSA Activities Strongly Related to Counterproliferation

Activity	Description	Accomplishments	Key Milestones	DoD ACE	Agency	FY 98 Budget [\$M]	PE No.
<u>Proliferation Prevention</u> • DTSA Activities	<ul style="list-style-type: none"> Develops and implements DoD policies regarding military and dual-use exports and coordinates DoD's review of export licenses 	<ul style="list-style-type: none"> Enhancement of new multinational export control framework, the "Wassenaar Arrangement" Reviewed over 18,000 export license applications for military and dual-use technologies Conducted export control cooperation programs with other nations 	<ul style="list-style-type: none"> Continue to monitor and update export control regulations Continue export license reviews Continue international cooperation activities 	14	DTSA	10.542	O&M
• Totals:						10.542	

Table C.13: Key Joint Staff Programs Strongly Related to Counterproliferation

Program/Project Title	Project Description	Project Accomplishments	Key Milestones	DoD ACE	Agency	FY 98 Budget [\$M]	PE No.
<u>Active Defense</u> • JTAMDO Support	<ul style="list-style-type: none"> Planning, coordination, and oversight of Joint integrated theater air and missile defense requirements generation, Joint operational concepts, and architecture development Modeling and simulation and studies and analysis support 	<ul style="list-style-type: none"> New Start in FY 1998 	<ul style="list-style-type: none"> Maintain requirements section of Master Plan for fielding integrated theater air and missile defenses Coordinate and support Services, CINCs, and DoD Agencies in interoperability assessments and initiatives 	4, 7	Joint Staff	23.100	605126J
• Totals:						23.100	

APPENDIX D

Planned FY 1998 Budget Profile for DOE Programs Related to Countering Proliferation

The planned FY 1998 funding profiles for DOE nonproliferation programs related to countering proliferation and addressing the counterproliferation ACEs are provided in Table D.1 below.

Table D.1

Planned FY 1998 Budget Profile for DOE Programs Related to Countering Proliferation

DOE Activity Area	DOE ACE Priority	FY 1998 Budget [\$M]
• Detecting and Characterizing Worldwide Production of Nuclear Materials and Weapons	1	66.8
• Monitoring Worldwide Nuclear Testing	5	81.2
• Preventing and Detecting the Diversion and Smuggling of Nuclear Materials	1, 7	43.5
• Securing Nuclear Materials, Technology, and Expertise in Russia and the FSU	1	167.0
• Limiting Weapons-Usable Fissile Materials Worldwide	1	16.4
• Ensuring Transparent and Irreversible Reductions in Global Nuclear Stockpiles	1	3.5
• Controlling Nuclear Exports	9	16.5
• Strengthening the Nuclear NPT Regime	5	34.4
• Nuclear Emergency and Terrorism Response	2, 4	41.1
• Chemical and Biological Nonproliferation Program	3	19.0
	• Total:	\$489.4

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APPENDIX E

Listing of Acronyms and Abbreviations

AB	Air Base
ABL	Airborne Laser
A/C	Aircraft
ACADA	Automatic Chemical Agent Alarm
ACDA	U.S. Arms Control and Disarmament Agency
ACE(s)	Area(s) for Capability Enhancements
ACPM	Aircrew Protective Mask
ACQWeb	DoD's Acquisition and Technology Worldwide Web Site
ACTD	Advanced Concept Technology Demonstration
AEGIS	Navy shipboard air defense system
AERP	Aircrew Eye/Respiratory Protection
AICPS	Advanced Integrated Collective Protection System
AOR	Area of Responsibility
ASD	Assistant Secretary of Defense
ASD(C3I)	Assistant Secretary of Defense (Command, Control, Communications, and Intelligence)
ASD(ISP)	Assistant Secretary of Defense (International Security Policy)
ASD(SO/LIC)	Assistant Secretary of Defense (Special Operations/Low-Intensity Conflict)
ATD	Advanced Technology Demonstration
ATR	Automatic Target Recognition
ATSD(NCB)	Assistant to the Secretary of Defense for Nuclear and Chemical and Biological Defense Programs
AUP	Advanced Unitary Penetrator
AWACS	Airborne Warning and Control System
BA	Budget Activity
BDA	Battle Damage Assessment
BIDS	Biological Integrated Detection System
Bio/BIO	Biological
Blk	Block (as in Block upgrade for a procurement item)
BM	Battle Management
BMDO	Ballistic Missile Defense Organization
BW	Biological Warfare or Biological Weapons
BWC	Biological Weapons Convention
CALIOPE	Chemical Analysis by Laser Interrogation of Proliferation Effluents
CB ACT	Chemical Biological Arms Control Technology
CBD	Chemical and Biological Defense

CBDCOM	Chemical and Biological Defense Command (Army)
CBDP	Chemical and Biological Defense Program
CBIRF	Chemical/Biological Incident Response Force
CBMS	Chemical/Biological Mass Spectrometer
CBNP	Chemical and Biological Nonproliferation Program (DOE)
CBPS	Chemical/Biological Protective Shelter
CBQRF	Chemical Biological Quick Reaction Force
CBSS	Chemical/Biological Sentry System
C2	Command and Control
C3	Command, Control, and Communications
C3I	Command, Control, Communications, and Intelligence
C4I	Command, Control, Communications, Computers, and Intelligence
C4ISR	Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance
CDR	Critical Design Review
CENTCOM	U.S. Central Command
chem	chemical
CIA	Central Intelligence Agency
CINC	Commander-in-Chief
CIPT	Counterproliferation Integrated Process Team (Air Force)
CJCS	Chairman of the Joint Chiefs of Staff
CMO	Central MASINT Office
CNS	Committee on National Security
CO₂	Carbon Dioxide
COEA	Cost and Operational Effectiveness Assessment
CONOPS	Concept of Operations
CONPLAN	Concept Plan
CONUS	Continental United States
CP	Counterproliferation
CP1 ACTD	ongoing Counterproliferation ACTD
CP2 ACTD	follow-on Counterproliferation Counterforce ACTD
CPRC	Counterproliferation Program Review Committee
CPSP	Counterproliferation Support Program
CTBT	Comprehensive Test Ban Treaty
CTR	Cooperative Threat Reduction
CTTS	Counterterror Technical Support
CW	Chemical Warfare or Chemical Weapons
CWC	Chemical Weapons Convention
DAB	Defense Acquisition Board
DARPA	Defense Advanced Research Projects Agency
DATSD(NCB)(CP)	Deputy for Counterproliferation to the ATSD(NCB)
DATSD(NCB)(NTP)	Deputy for Nuclear Treaty Programs to the ATSD(NCB)
DCI	Director of Central Intelligence
Decon.	decontamination

Demo.	Demonstration
Dem/Val	Demonstration and Validation
Devel.	development
DGP	Defense Group on Proliferation (NATO)
DIA	Defense Intelligence Agency
DIAL	Differential Absorption Lidar
DIS	Distributed Interactive Simulation
DNA	Deoxyribonucleic Acid
DoD	Department of Defense
DOE	Department of Energy
DPRK	Democratic Peoples Republic of (North) Korea
DS-2	Standard CW decontamination fluid
DSP	Defense Support Program (satellite)
DSWA	Defense Special Weapons Agency (formerly Defense Nuclear Agency)
DT	Development Test
DTRG	Defense Technical Response Group (Navy)
DTSA	Defense Technology Security Administration
DUSD(ICP)	Deputy Under Secretary of Defense (International and Commercial Programs)
EDT	Engineering Design Review and Test
EEE	Eastern Equine Encephalitis
EMD	Engineering and Manufacturing Development
EMP	Electromagnetic Pulse
EOD	Explosive Ordnance Disposal
EPA	Environmental Protection Agency
EUCOM	U.S. European Command
FBI	Federal Bureau of Investigation
FDA	Food and Drug Administration
FEMA	Federal Emergency Management Agency
FLIR	Forward Looking Infrared
FOPEN	Foliage Penetration
FOWG	Fiber Optic Wave Guide
FOX	designator for the XM93 NBCRS armored vehicle
FSU	Former Soviet Union
FUE	First Unit Equipped
FY	Fiscal Year
FYDP	Future Years Defense Plan
GAN	Russian Federal Nuclear Radiation and Safety Authority
GBU	Guided Bomb Unit
GPS	Global Positioning System

HAARP	High Altitude Auroral Research Project
HASCAL	NBC hazard prediction code
HDBTDC	Hard and/or Deeply Buried Target Defeat Capability
HEU	Highly Enriched Uranium
HPAC	Hazard Prediction and Analysis Code
HTSF	Hard Target Smart Fuze
IAEA	International Atomic Energy Agency
IBAD	Interim Biological Agent Detector
IBIS	Israeli Boost Intercept System
ICAM	Improved Chemical Agent Monitor
ICBM	Intercontinental Ballistic Missile
IDC	International Data Center (CTBT)
IMEA	Integrated Munitions Effectiveness Analysis
IMS	International Monitoring System (CTBT)
INF	Intermediate Range Nuclear Forces (Treaty)
Intell.	U.S. Intelligence
IOC	Initial Operating Capability
IOTE	Initial Operational Test and Evaluation
IPB	Intelligence Preparation of the Battlespace
IPDS	Improved (chemical agent) Point Detector System
IPP	Initiative for Proliferation Prevention
IPR	In-Process Review
IPT	Integrated Process (or Product) Team
IR	Infrared
ITAG	Inertial Terrain-Aided Guidance
J-2	Joint Staff designator for Intelligence
J-3	Joint Staff designator for Operations
J-5	Joint Staff designator for Plans and Policy
J-8	Joint Staff designator for Force Structure, Resources, and Assessments
JBPDS	Joint Biological Point Detection System
JBREWS	Joint Biological Remote Early Warning System
JCAD	Joint Chemical Agent Detector
JCS	Joint Chiefs of Staff
JMIP	Joint Military Intelligence Program
JPO-BD	Joint Program Office for Biological Defense
JROC	Joint Requirements Oversight Council
JSLIST	Joint Services Lightweight Suit Technology
JSLSCAD	Joint Service Lightweight Standoff Chemical Agent Detector
JSTARS	Joint Surveillance Target Attack Radar System
JTAMDO	Joint Theater Air and Missile Defense Organization

JTIDS	Joint Tactical Information Distribution System
JVAP	Joint Vaccine Acquisition Program
JWARN	Joint Warning and Reporting Network
JWCA	Joint Warfighting Capabilities Assessment
JWCO	Joint Warfighting Capability Objectives
JWSTP	Joint Warfighting Science and Technology Plan
km	kilometer
LANTIRN	Low Altitude Navigation and Targeting Infrared for Night
LEAP	Lightweight Exoatmospheric Projectile
LIC	Low-Intensity Conflict
lidar	Light Detection and Ranging
LLNL	Lawrence Livermore National Laboratory
LNBCRS	Lightweight Nuclear, Biological, and Chemical Reconnaissance System
LR-BSDS	Long Range Biological Standoff Detection System
LRIP	Low Rate Initial Production
LTBT	Limited Test Ban Treaty
MASINT	Measurement and Signature Intelligence
MCTL	<i>Militarily Critical Technologies List</i>
MDAP	Major Defense Acquisition Program
MDBIC	Missile Defense Battle Integration Center (Army)
MDS	Modular Decontamination System
MEA	Munitions Effectiveness Analysis
MEADS	Medium Extended Air Defense System
MICAD	Multipurpose Integrated Chemical Agent Detector
Minatom	Ministry of Atomic Energy (Russia)
MoU	Memorandum of Understanding
MPC&A	Material Protection, Control, and Accounting
MRI	Mutual Reciprocal Inspection
MS	Milestone (acquisition)
MSX	Midcourse Space Experiment (satellite)
N-ABLE	Nonproliferation Airborne Lidar Experiment
NATO	North Atlantic Treaty Organization
NBC	Nuclear, Biological, and Chemical
NBC/M	Nuclear, Biological, and Chemical weapons and their Means of delivery
NBCRS	NBC Reconnaissance System (XM93 FOX armored vehicle)
NDAA	National Defense Authorization Act

NDI	Non-Developmental Item
NEST	Nuclear Emergency Search Team
NFIP	National Foreign Intelligence Program
NMD	National Missile Defense
NPAC TWG	Nonproliferation and Arms Control Technical Working Group
NPC	Nonproliferation Center
NPRC	Nonproliferation Program Review Committee
NPT	Nonproliferation Treaty
NRL	Naval Research Laboratory
NSC	National Security Council
NSTC	National Science and Technology Council
NTP	Nuclear Treaty Programs
NTW	Navy Theater Wide (ship-based ballistic missile defense system)
OCONUS	Outside the Continental United States
ODATSD(NCB)(CP)	Office of the Deputy for Counterproliferation to ATSD(NCB)
O&M	Operations and Maintenance
OMB	Office of Management and Budget
Op.	operational or operations
OPW	Operational Planning Workshops
ORNL	Oak Ridge National Laboratory
OSD	Office of the Secretary of Defense
OSIA	On-Site Inspection Agency
OT	Operational Test
PAC	PATRIOT Advanced Capability
PACOM	U.S. Pacific Command
PA&E	Program Analysis and Evaluation
PATS	Protection Assessment Test System
PDD	Presidential Decision Directive
PDUSD(A&T/S&TS)	Principal Deputy Under Secretary of Defense for Strategic and Tactical Systems (to USD(A&T))
PE	Program Element
Ph.	Phase
POM	Program Objective Memorandum
P3I	Pre-Planned Product Improvement
PPQT	Pre-Production Qualification Test
Q	Quarter (fiscal year)
Radiac	Radiation Detection, Indication, and Computation
R&D	Research and Development

RDT&E	Research, Development, Test, and Evaluation
REVS	Robotic Excavation Vehicle System
RFP	Request for Proposals
ROK	Republic of (South) Korea
RONs	Remote Ordnance Neutralization System
SAIP ACTD	Semi-Automated Imagery Processing ACTD (DARPA)
SALAD	Shipboard Automated Liquid (CW) Agent Detector
SBIR	Small Business Innovation Research
SCAMP	Shipboard Chemical Agent Monitor – Portable
SCUD	NATO designator for Soviet theater ballistic missile
SEI	Specific Emitter Identification
SFAI	Swept Frequency Acoustic Interferometry
SLBM	Submarine Launched Ballistic Missile
SM	Standard Missile
SOCOM	U.S. Special Operations Command
SOF	Special Operations Forces
SO/LIC	Special Operations/Low-Intensity Conflict
SPACECOM	U.S. Space Command
SR-BSDS	Short Range Biological Standoff Detection System
S&T	Science and Technology
START	Strategic Arms Reduction Treaty
STI	Safeguards, Transparency, and Irreversibility
STRATCOM	U.S. Strategic Command
TACMS	Tactical Missile System
TBMD	Theater Ballistic Missile Defense
Tech. Eval.	technical evaluation
TEU	Technical Escort Unit (Army)
THAAD	Theater High Altitude Air Defense
THEL	Tactical High Energy Laser
TIARA	Tactical Intelligence and Related Activities
TMD	Theater Missile Defense
TSWG	Technical Support Working Group
TTBT	Threshold Test Ban Treaty
TUGS	Tactical Unattended Ground Sensor
TUV	Tactical Unmanned Vehicle
TW/AA	Tactical Warning and Attack Assessment
UAV	Unmanned Aerial Vehicle
UGS	Unattended Ground Sensor
UGV	Unmanned Ground Vehicle
UN	United Nations

UNSCOM	United Nations Special Commission (Iraq)
UOES	User Operational Evaluation System
U.S.	United States
USA	United States Army
USAF	United States Air Force
USCENTCOM	U.S. Central Command
USD(A&T)	Under Secretary of Defense (Acquisition and Technology)
USEUCOM	U.S. European Command
US INTELL	U.S. Intelligence
USMC	United States Marine Corps
USN	United States Navy
USPACOM	U.S. Pacific Command
USSOCOM	U.S. Special Operations Command
USSPACECOM	U.S. Space Command
USSTRATCOM	U.S. Strategic Command
UV	Ultraviolet
VEE	Venezuelan Equine Encephalitis
ver	version (software)
VX	designator for a type of chemical nerve agent
WBS	Weapon Borne Sensor
WEE	Western Equine Encephalitis
WMD	Weapons of Mass Destruction